

**EVALUATION OF MOTORIST SERVICES
ON SAUDI ARABIAN
MOTORWAYS**

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Master of Landscape Architecture**

**This thesis is submitted in fulfilment of the Degree of
Doctor of Philosophy in Town and Country Planning**

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CHAPTER ONE

CHAPTER ONE

INTRODUCTION

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CHAPTER ONE

INTRODUCTION

Road development in Saudi Arabia is considered one of the major products of the social and economic development that the country has witnessed in the last two decades. In the last decade, motorways were built to connect major population centres in the Kingdom using high international standards (Figure 1.1). However, the motorway service areas which took place along these motorways sides were incompatible with the motorway system.

This disparity in standards between the motorways and the motorway services is related to the planning, design, development, and facilities outcome in these service areas in contrast to similar services provided in more developed countries.

Many factors have definitely contributed to the formation of the existing services, because they were the outcome of a set of planning and development procedures which involves different interests from different contributors such as the governmental controlling authorities, the operators of the service areas, and the users themselves.

1.1 Objectives of the Study.

Like many non-urban developments, motorway services were among the neglected areas of research in planning studies in Saudi Arabia; therefore, the main objective



Figure 1.1:
In the Last Decade, Motorways were Built in the Kingdom Using High International Standards.

of this research is to provide a full study of the current situation in the motorway service areas in the

Kingdom, to identify the facilities provided to travellers and their planning and design situations.

In the process of achieving this major objective, other objectives were also met in this research. These objectives include identifying the history and background of travellers services in Saudi Arabia, contributions of other countries in the field of motorist services, and the role of government policies and controls in the formation of existing services.

It is hoped that this research will provide a solid base for further studies, and will be useful for decision makers and professionals. It is also hoped that it will foster better understanding and lead to improvements of the motorway service areas in Saudi Arabia through its findings and recommendations.

1.2 Research Hypotheses.

This research is based on the following three main hypotheses:

- (1) The services and facilities provided for the travelling public by existing motorist services have many shortcomings.
- (2) There is no adequate or reliable policy and specifications for the development of motorway service areas in the Kingdom.
- (3) There is a lack of coordination between the different controlling authorities which has been detrimental in the development of motorway service areas.

1.3 Study Organization.

This study is divided into nine chapters, of which this chapter (Chapter one) is an introduction, giving some important geographical background about the Kingdom of Saudi Arabia.

1.3.1 Chapter Two: Historical Background.

This chapter provides an historical background of travellers services in the Arabian Peninsula before Islam, and later after the spread of Islam. Moreover, it also examines the early traditional gahwabs (or travellers resting places) which were found in the Hijaz region of today's Saudi Arabia.

1.3.2 Chapter Three: General Background.

This chapter examines the general background of transport development and services in the Kingdom. It covers mobility, development of roads, and the services provided by the gahwabs of the transitional period, which catered for travellers before the construction of the modern motorways.

1.3.3 Chapter Four: Other Countries Experience in Motorist Services.

This chapter focuses on the American and British motorist Services, as two examples representing two different systems of serving motorists. This chapter also compares the two systems and involves some critical discussion about each of them.

1.3.4 Chapter Five: Survey Methods.

This chapter describes in detail the methods used for gathering data upon which most of the thesis is based. It starts with the documents collected from the different agencies involved, and the interviews made with governmental and non governmental officials. Further, it explains the methods used in conducting the physical survey of the motorway service areas and the questionnaire which was made with the travellers.

1.3.5 Chapter Six: Government Policies and Control.

This chapter discusses the different aspects of government policies and controls, which covers development regulations, land provision policies, and the role of the different governmental agencies involved in the development of the motorway service areas.

1.3.6 Chapter Seven: Facilities in the Motorway Service Areas.

This chapter is an important one because it examines the facilities issue in the motorway service areas from different angles. Firstly, from the government regulations; secondly, from the realities of the field based on the physical survey carried out in the motorway service areas; and thirdly, from the travellers input through the questionnaire conducted with them.

1.3.7 Chapter Eight: Planning, Design, and Utilities of Motorway Service Areas.

This chapter's importance comes from the fact that it reflects the existing services situation which came as a result of the existing practices, whether from the governmental authorities, developers, or designers of the service areas. The aspects covered in this chapter are many, it starts with the distribution of motorway services, followed by the design aspects such as the layout, landscape design, and architecture. It also covers the utilities of the service areas, and finally discusses the evaluation of motorway service areas.

1.3.8 Chapter Nine: Conclusion.

The aim of this final chapter is to provide a summary for the major points raised in the earlier chapters. In addition, it gives general recommendations for the improvement of motorway service areas on the Saudi Arabian motorways.

1.4 Geographical Background

In this introductory chapter some background facts about the geographical situation in Saudi Arabia are very relevant. These background facts will start by the general location of the country followed by other facts related to the climate, temperature and humidity, rainfall, topography, population, and population distribution.

1.4.1 General Location of Saudi Arabia

The Kingdom of Saudi Arabia is bordered to the west by the Red Sea; to the east by the Arabian Gulf; to the north by Kuwait, Iraq and Jordan ; and to the south by Oman, South Yemen , and North Yemen (Figure 1.2). It occupies an area of

2,240,000 km², around 80 % of the total area of the Arabian Peninsula¹. (Figure 1.3).

1.4.2 Climate

Many factors conspired to shape the climatical character of Saudi Arabia. The tropical location of the country between latitudes 16° - 32,30° north, in addition to its isolation from the water effects by the two huge continents of Asia on the east and Africa on the west, together with the country's large size amalgamated to give the country the characteristics of an arid climate, where rain is scarce and high temperatures prevail².

1.4.3 Temperature and Humidity

Summer is generally hot in all the Kingdom regions, especially in the northern, central, and eastern parts. Moreover summer high temperatures have large variations between day and night. These variations range from 14°C in Riyadh in the middle to 16°C in Dhahran on the east coast (Figure 1.4) . In the coastal regions, the high summer temperatures are accompanied by high relative humidity, which can reach as high as 100% in Dhahran on the Arabian Gulf and 97% in Jeddah and 100% in Yanbu on the Red Sea , which adds to the summer discomfort in these coastal areas (Figure 1.5). Summer maximum temperatures can exceed 40°C in most of the regions, except the southwestern mountains, where the maximum temperatures remain below 35°C. Winter is moderately cold and dry, except on the east and west coasts, where water bodies moderate the weather. Winter minimum temperatures can reach as low as 0°C in some areas of the northern region, but overall the winter is a cool and pleasant season in the Kingdom when compared to the hot summer³(Figure 1.6).

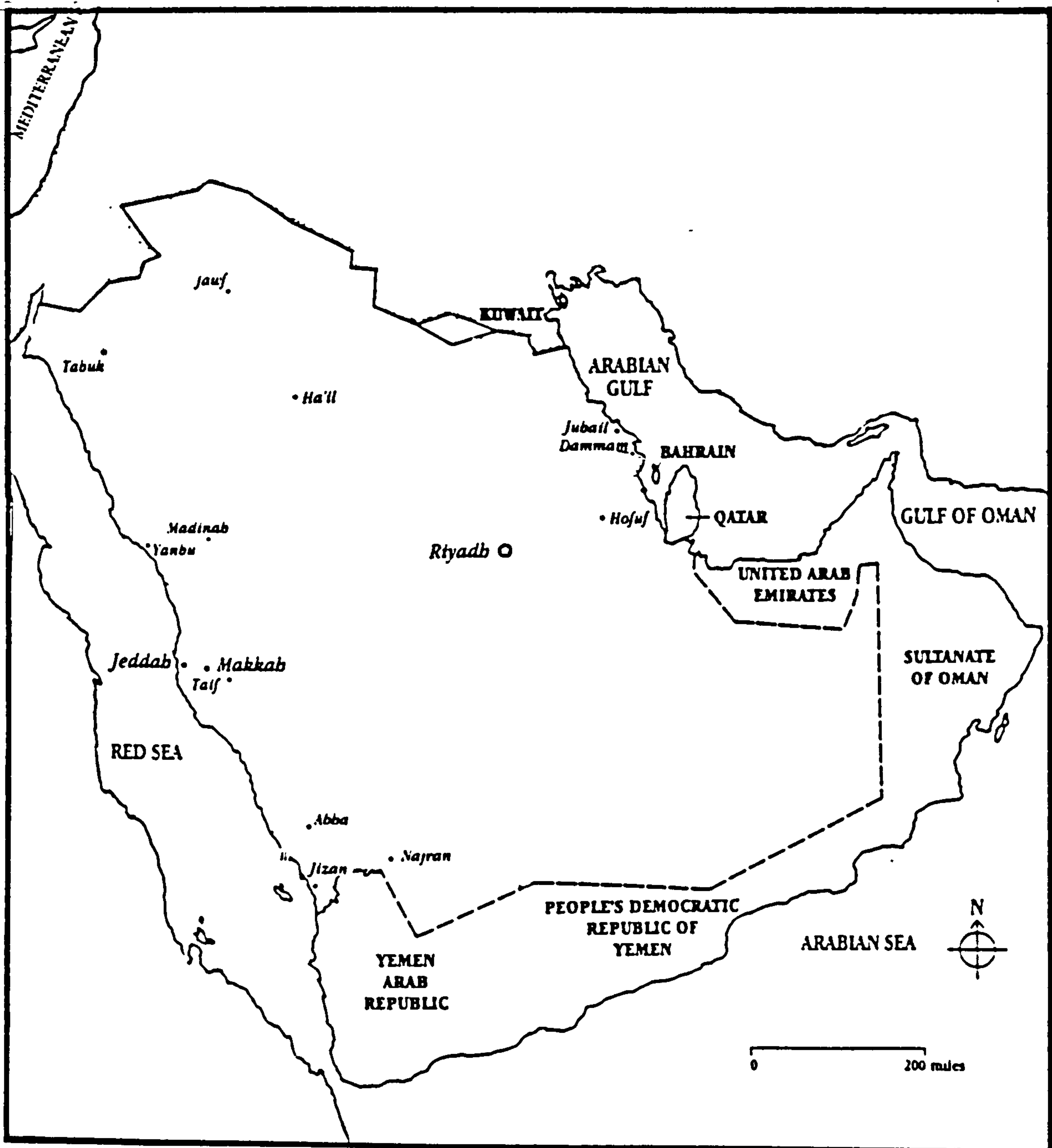
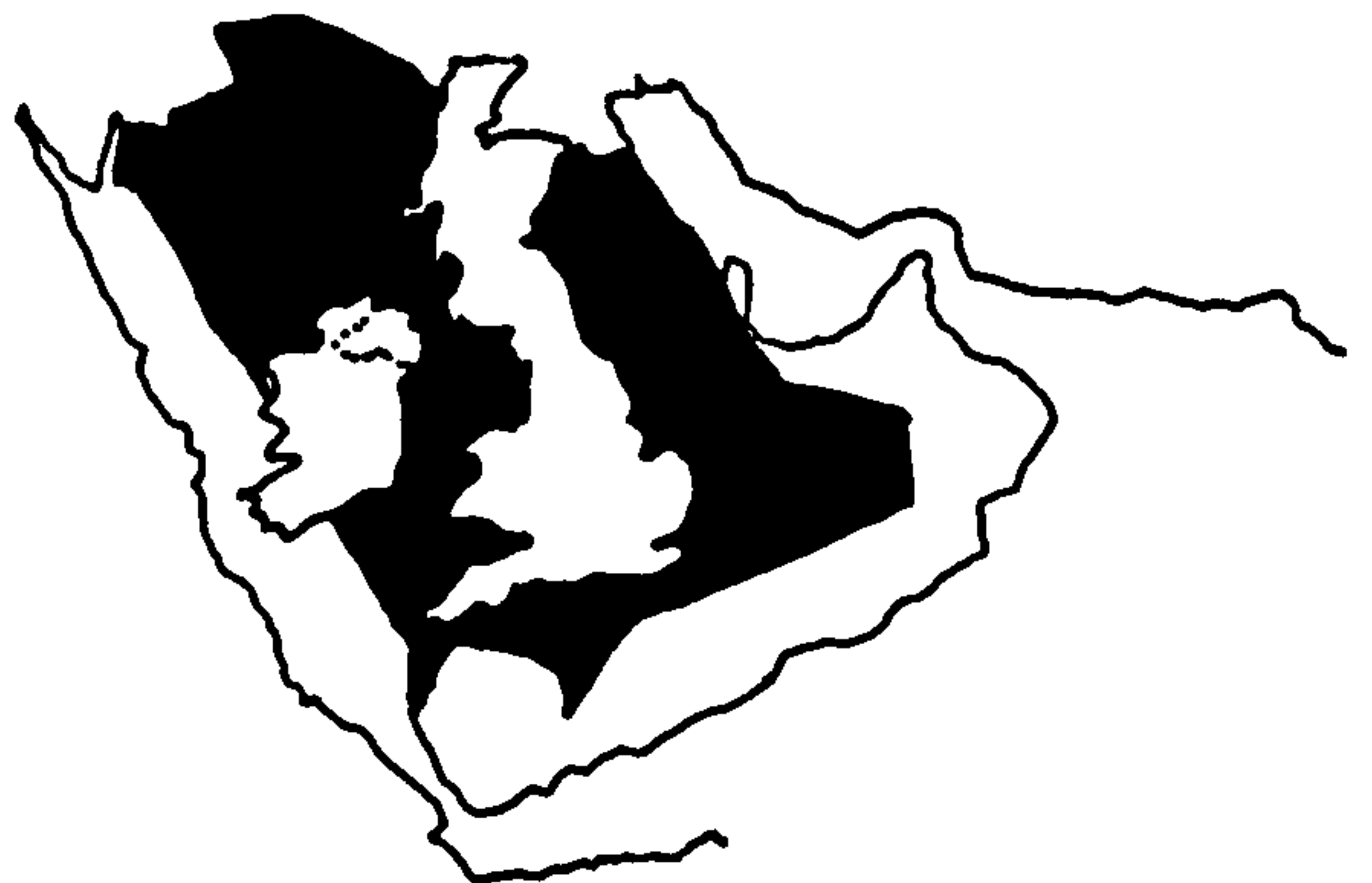


Figure 1.2:
Saudi Arabia, General Location.

Figure 1.3:
The Size of the United Kingdom
Compared to Saudi Arabia.



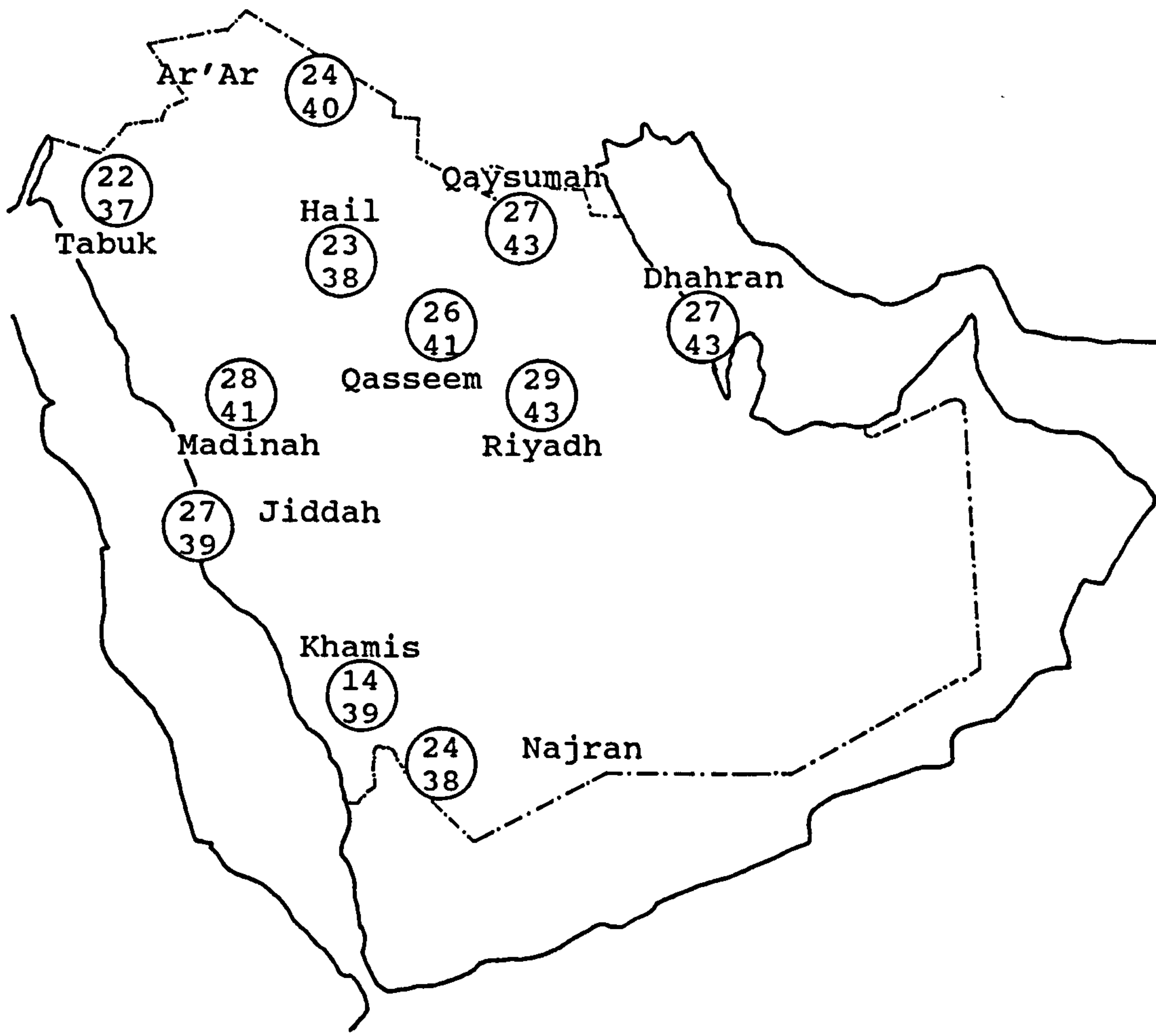


Figure 1.4:
July Average Minimum and Maximum Temperatures (°C).

Source: Ministry of Finance and National Economy, 1982.

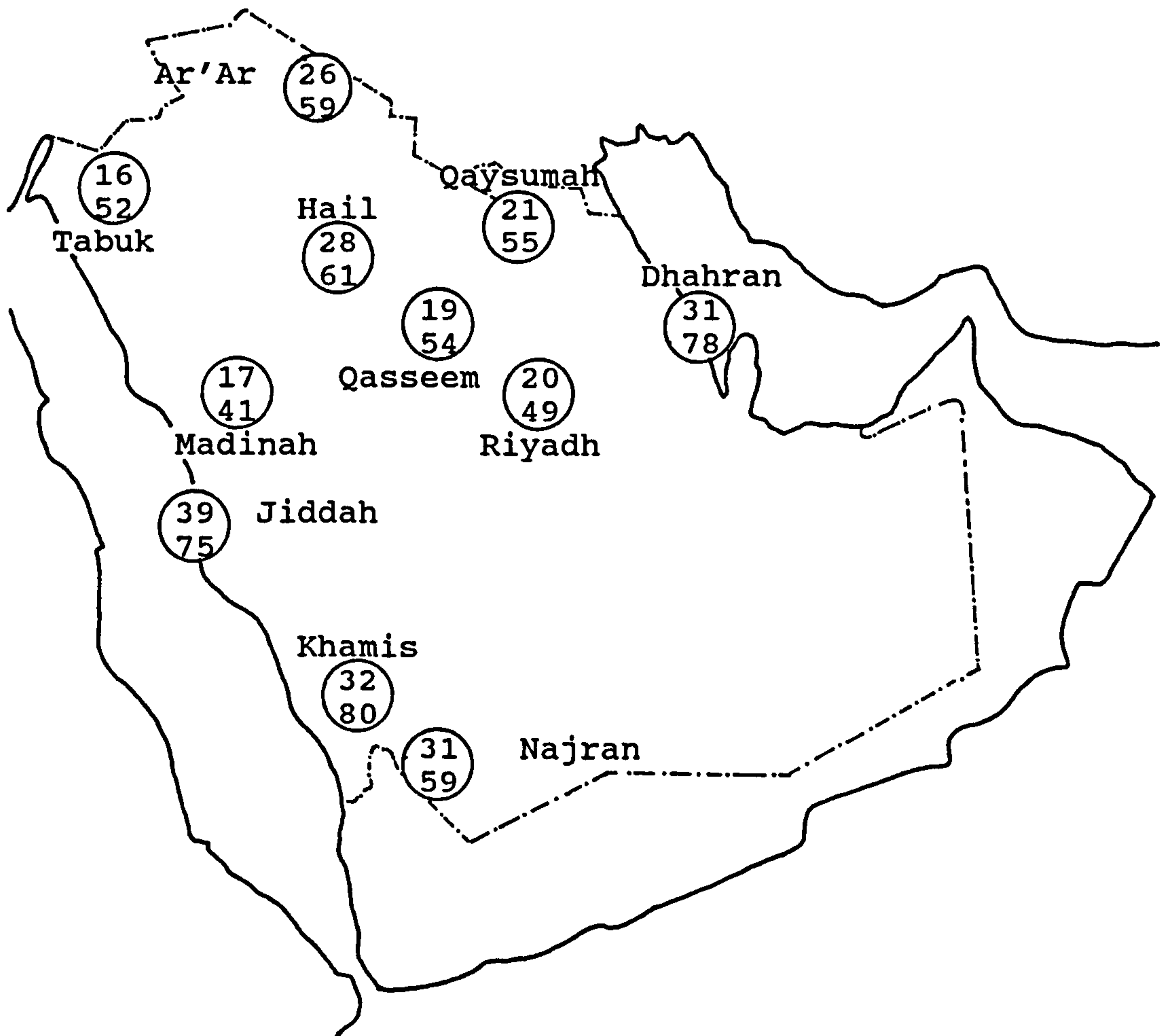


Figure 1.5:
Average Minimum and Maximum Relative Humidity.

Source: Ministry of Finance and National Economy, 1982.

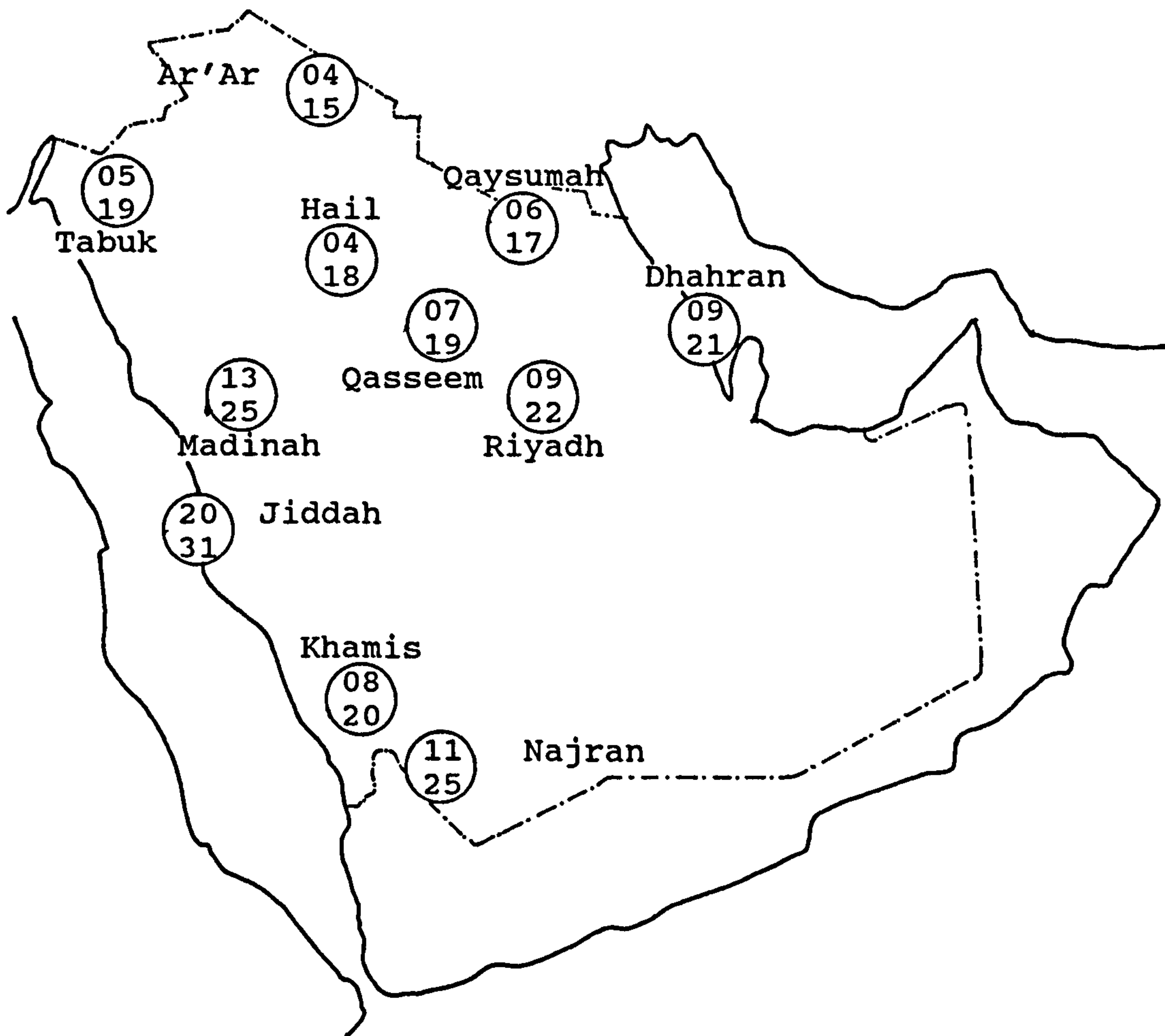


Figure 1.6:
January Average Minimum and Maximum Temperatures (°C).

Source: Ministry of Finance and National Economy, 1982.

1.4.4 Rainfall

Because the Kingdom is normally under the influence of the sub-tropical high pressure system, rainfall is very scarce (Figure 1.7). Almost all the rainfall is associated with thundershowers produced by low-pressure areas from the eastern Mediterranean that move across the northern parts of the country in winter. In spring and early summer periods the rain is caused by the incursion of the maritime air caused by Sudan low-pressure zone. The summer rain is concentrated on the southwestern mountains region, which receive the largest quantity of rain falling on the Kingdom⁴.

1.4.5 Topography

Along the Red Sea lies the narrow 'Tihamats' plain of variable width, ranging from 10 kms in the north to 30- 40 kms in the south (Figure 1.8).

East of this coastal plain runs a range of high mountains. The highest of these mountains are in Asir where peaks rise for 2743 metres. Then they descend as they go north.

Directly to the east of these mountains, lies the Najd plateau with an average height of 1219-1829 metres. The elevation drops to 610 metres at the Ad-Dahna desert in the east. The Najd plateau extends south to run parallel to the Rub' Al-Khali desert (the empty quarter). To the north, the plains of Najd extend until they join the Iraqi and Jordanian borders.

There are number of mountainous areas in Najd like Aredh and Uwairdh, Mt.Aga, Mt.Salma, and the Tuwaiq range, which runs from the southwest to the north west into the Nafud.

The Nafud are sandy hills having the form of ribs extending towards the north where they come together in what is called the Great Nafud. On the eastern part of

Ad-Dahna the land gradually descends towards sea level along the Arabian Gulf⁵ (Figure 1.8).

1.4.6 Population

The general population density is considered very low in the Kingdom because of the country's large size. The 1974 statistics showed that, the total population of the country is 7,009,466 cap.; which means that, the country's overall density is 3.13 people for every km² ⁽⁶⁾.

1.4.7 Population Distribution

According to the same statistics of 1974, there are 20995 inhabited locations in the Kingdom. These inhabited locations are distributed between 14 major administrative regions, but in general the population is concentrated in 4 major regions. These regions are:

- 1-Makkah, has 25% of the total population.
- 2-Riyadh, has 18% of the total population.
- 3-Eastern Province, has 13% of the total population.
- 4-Asir, has 10% of the total population.
- 5-Madinah, has 7% of the total population.

The remaining regions have different population densities ranging between 1% to 6% of the total population⁷(Figure 1.9).

The urban settlements in the Kingdom, as were described by Kadi, O.A. and Dr.Ibrahim, H.M., are concentrated along an east-west axis stretching between Dammam on the east coast and Jeddah on the west coast, however this axis does

not comprise a conurbation, but is characterised by major and well-distanced areas of population⁸. The three regions along this axis; Makkah, Riyadh and Eastern Province are forming 62% of the total urban population in the Kingdom⁹.

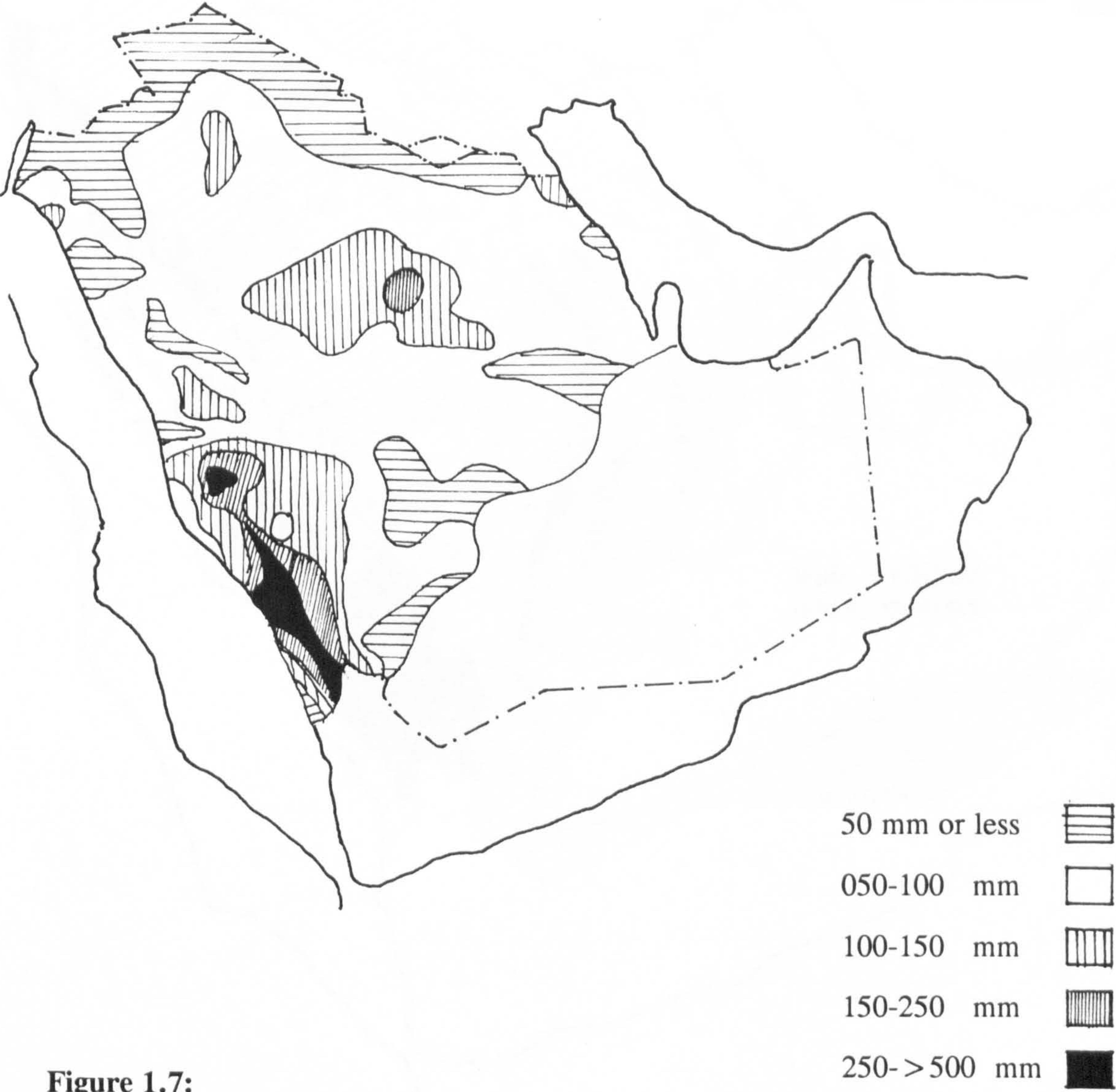


Figure 1.7:
Average Annual Rainfall in mm.

Source: Bandakji, 1980.

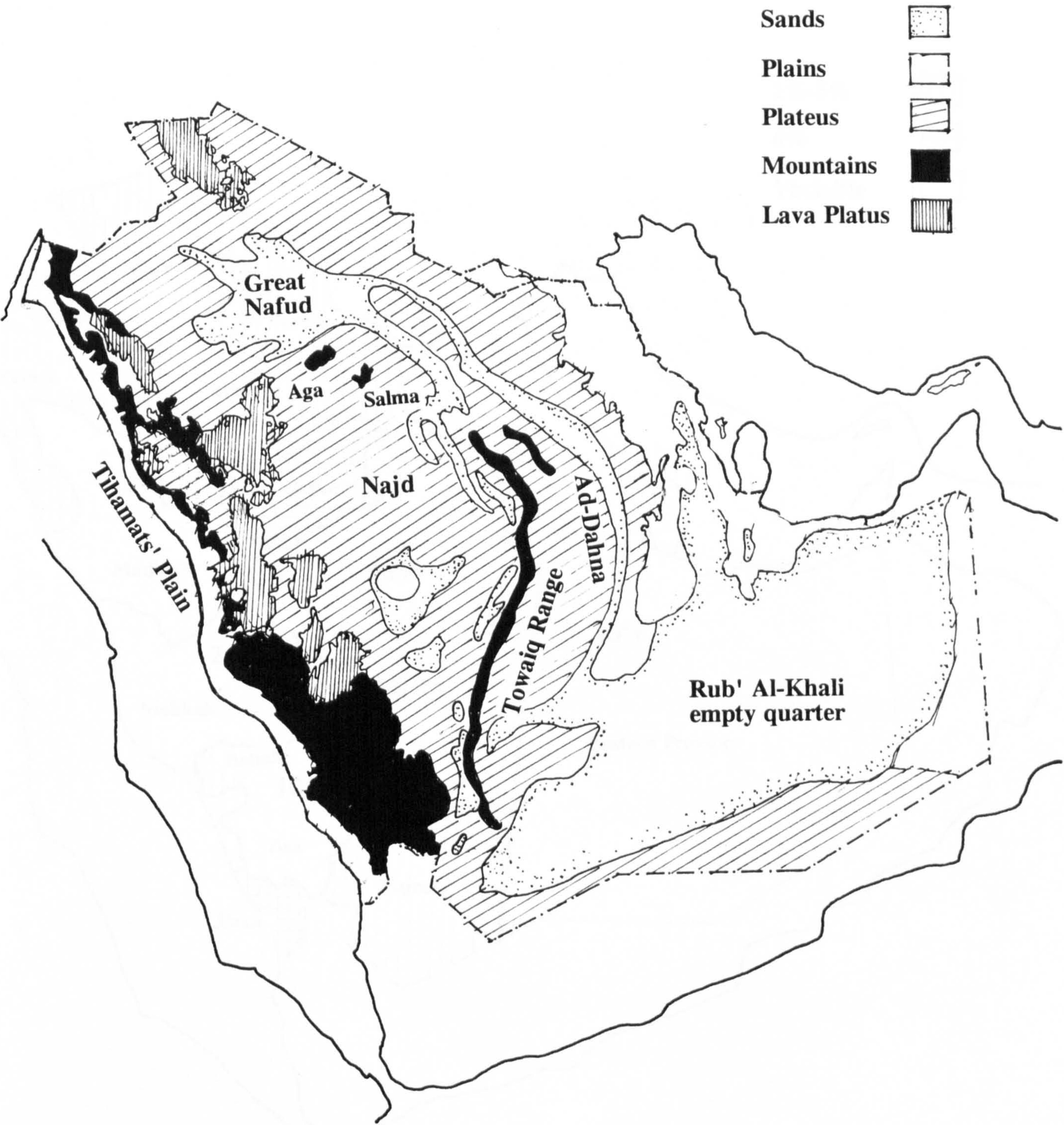


Figure 1.8:
Topography of Saudi Arabia.

Source: Bandakji, 1980.

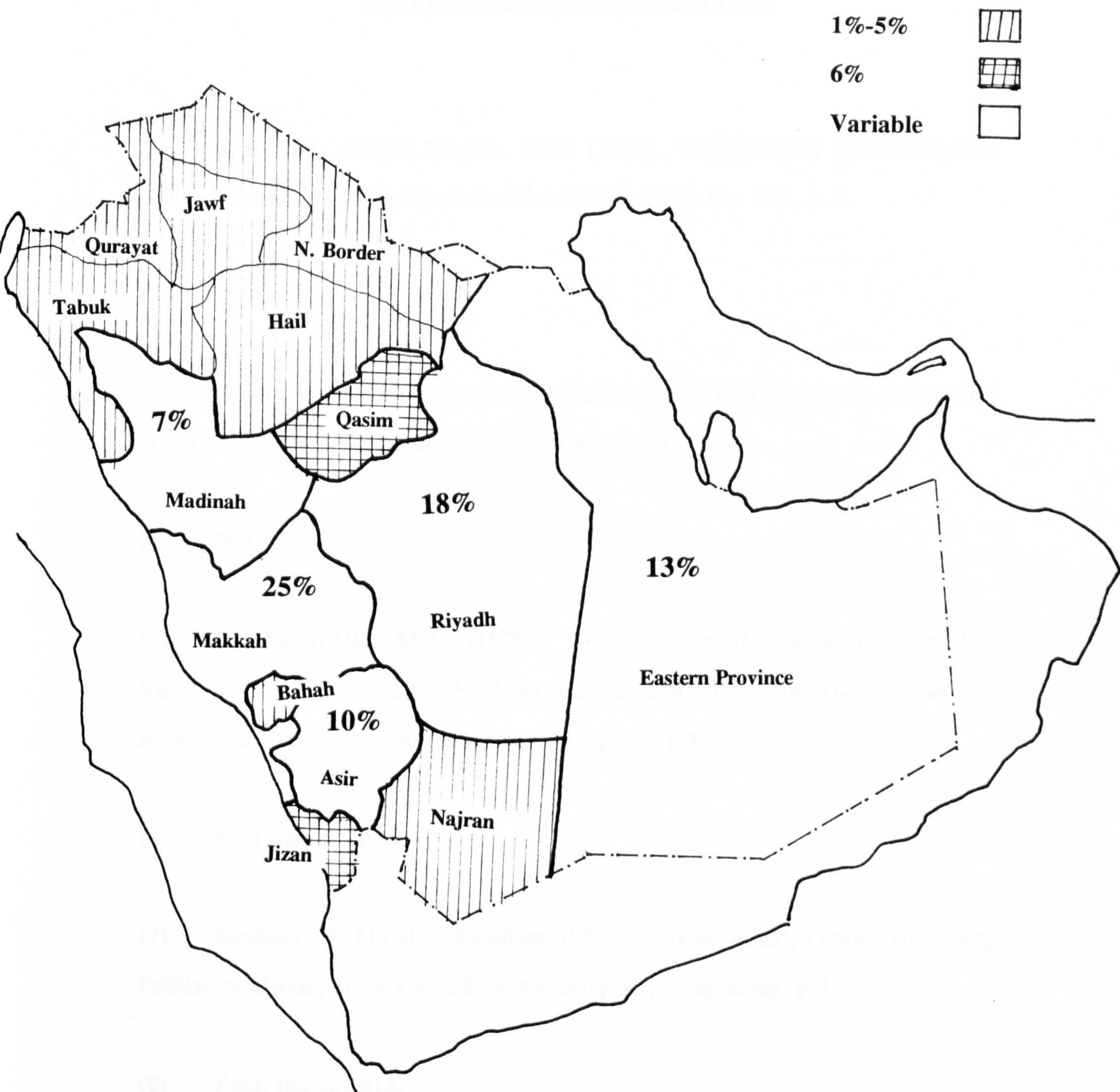


Figure 1.9:
Population Distribution in the Different Regions in the Kingdom.

Source: Bandakji, 1980.

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- (9) Bandakji, op.cit., p 9.

CHAPTER TWO

CHAPTER TWO

HISTORICAL BACKGROUND

2.1 The Pre-Islamic Period

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CHAPTER TWO

HISTORICAL BACKGROUND

In order to fulfil its final objectives of evaluating travellers services, this thesis will present some historical background of travel and travellers in Saudi Arabia. This will aid in understanding the history of roads and travel and their implications on travellers and their services.

The history of the area can be broken into two major periods: one pre-Islam and the other post-Islam. The pre-Islamic period will focus on Arab travel and roads services, while the Islamic period will focus on the traveller's rights in Islam and on the facilities provided for them.

2.1 The Pre-Islamic Period

Geographically, today's Saudi Arabia occupies a large area of the Arabian Peninsula, which has a long history of trade and travel. This pre-Islamic period began with early Arabs, who inhabited the peninsula, and ended with the rise of Islam in Madinah in the year 622 A.D.

"From early times Arabia has formed a transit area between the Mediterranean countries and the Further East, and its history has to a large extent been determined by the vicissitudes of east-west traffic"¹ (Figure 2.1).

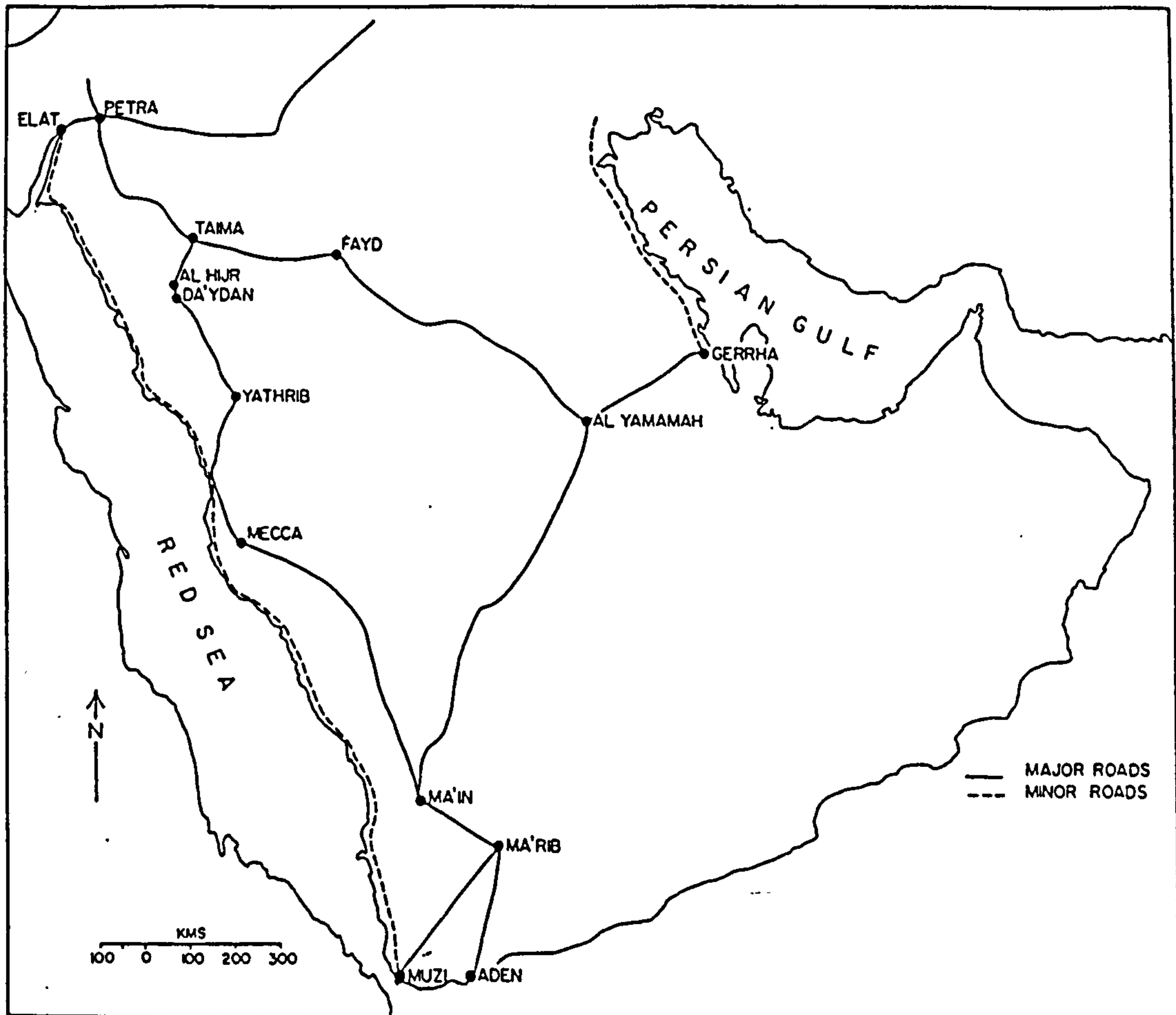


Figure 2.1:
Pre-Islamic Route Network.

Source: Abdoh, 1969, p 20.

The Arabs were the "masters of the desert". Their environment taught them to use the easiest routes, which had water sources, the most important factor in desert travel. In addition, their knowledge of desert oases, friendly tribes, and the nature of the camel gave them the ability to travel in the harsh deserts².

In other words, the climatical and vegetation conditions of the desert meant that no mode of transport but the camel, and no traders but the Arabs, could carry this trade across Arabia. Thus, the nature of Arabia made it impossible for the Romans, Syrians, Babylonians or any outsider to work in the transit trade across the desert of Arabia without the mediation of the Arabs as caravaners and traders³.

To be within the reach of necessary services, the caravan routes of this period followed desert oases for supply of food, water and protection.

These trade routes inevitably affected and were affected by the stations which they were following. The effect was centred around two levels: (1) locally between the stations and their surroundings and (2) between the stations and the transit trade.

Dr. Abdoh explained the effect on the local level by saying:

"Domestic trade and travel must have flourished due to the development of the oases and cities on the major routes. Exchange between nomads and the agriculture people of these oases must have been stimulated"⁴.

On the other level: offering services to the transit traders has brought wealth to the dwellers of the stations and stimulated exchange and consumption of imported goods and wares⁵.

Moreover, among the best Arabian traditions is their generosity and hospitality toward their guests. This helped travellers to cross the Arabian Peninsula with ease and safety, because it was the host's duty to take care of his guests and to insure their comfort.

The generosity was and still is a measure of the prestige of the tribe and the individuals in the Arab tradition, which was later confirmed by Islamic traditions.

Doughty explained that fact by saying:

"I speak many times of Arab hospitality, since of this I have been often questioned in Europe; and for a memorial of worthy persons. The hospitality of the worsted booths, the gentle entertainment of passengers and strangers in a land full of misery and fear, we have seen to be religious"⁶.

The people of the Arabian Peninsula had a mobile society which travelled in the desert. Their highways were a great network of caravan routes. Their service facilities were: urban settlements, tents of generous hosts, or desert oases. There, they enjoyed shade, water, rest, and safety during their travels.

2.2 The Islamic Period

The Islamic period began with the rise of Islam in the holy cities of Makkah and Madinah (now in Saudi Arabia), around the year 622 A.D., and later spread to the rest of Arabia and what is now known as the Islamic World.

The importance of this period comes from the fact that Saudi Arabia applies Shari'ah or Islamic law as the basis of its constitution⁷. It is rather important therefore to understand some of the essential elements of this law concerning the field of travel and travellers who in turn are the recipients of services.

2.2.1 Islam and The Traveller

In fact, Islamic teachings encouraged Muslims to travel for many purposes, especially those journeys which did not contradict with the aims and objectives of

the faith and those which benefited the individual or society in general. Some of the journeys mentioned by these teachings include travelling to acquire better living conditions, to seek knowledge, or to perform pilgrimage to Makkah, the fifth pillar of the Islamic faith.

Moreover, to make travel easier, Islamic teachings took consideration of the travelling difficulties and, therefore, some major duties such as prayers and fasting were lightened for the traveller.

Prayers, for example, one of the major Islamic duties and among the five pillars of the faith was made shorter for the traveller so as to assist in his performance.

Moreover, travellers were also given the freedom to offer two prayers together, which consequentially gives them longer periods of un-interrupted travel, so instead of stopping five times daily for prayers they can have the convenience of reducing that to three.

Additionally, unlike settlers, travellers were exempted from attending weekly congregations or attending other daily prayers in a mosque. Instead they had the flexibility of praying wherever they were during their journey.

Fasting is another example, where special consideration for the traveller is shown. Fasting takes place during the month of Ramadan, and like prayers, it is also one of the major duties and among the five pillars of the faith. Nevertheless, because of the difficulties usually associated with travel and to make it easier, the duty can be postponed until the traveller settles.

The same teachings gave additional assistance to travellers in the form of financial or material help. That assistance was made possible by making the wayfarer or the needy traveller among the eight beneficiaries of zakat or legal alms (the third pillar of the faith) gathered from the society.

Hajj, or pilgrimage to Makkah is the fifth pillar of the Islamic faith and it implies a travel to the holy sites, a duty on every Muslim. Even with this lifetime duty, there

has been an exception for those who cannot afford the journey whether physically or financially.

The duties mentioned above, prayers, fasting, zakat, and pilgrimage have special considerations for travellers and try to make travelling easier for them. Of course these duties are not linked directly to the travellers services as facilities, however they carry out the concept and the inspiration for making travel easier for travellers.

Some other teachings had a direct approach to the travellers services.

One hadith (a saying of Prophet Mohammed) clearly demonstrated the difficulties involved in travel, it stated:

"Travel is a part of chastisement. Traveller is deprived of facilities of eating, drinking and sleeping..."⁸.

Among the physically oriented services, and yet very significant to the travellers, are those related to roads and water supply.

According to the Islamic teachings, it is a charity to clear the way of obstacles, or to provide travellers with assistance⁹. Insuring water supply to travellers has also been taken in consideration, one 'hadith' clearly stated a severe punishment in the day of resurrection for he who possess superfluous water and withheld it from travellers¹⁰.

It is obvious from the examples shown above the special consideration and exceptional treatment given to the traveller by the Islamic teachings. A treatment which shows a clear stand in taking care of the traveller by making his journey easier.

2.2.2 Travellers Services

This special consideration by the Islamic teachings, inspired the Islamic states historically to show similar concern to the travelling public, by providing roads and facilities to make travel safer and easier.

An example of that is what was mentioned by Dr. Saad Al-Rashid on his book on Zubaidah Road (originally a Ph.d. research presented to Leeds University in June 1977). Based on the work of two well known Muslim historians, the author said:

"According to Ibin Saa'd and at-Tabari, the Caliph Umar Ibn al-Khattab (634-644) went to Mecca from Medina in 638 in order to perform the umrah (the lesser hajj). On this journey, the owners of the water requested Umar's permission to establish stations (manazil) along the route between Mecca and Medina. (At that time there were no permanent facilities along this route). Umar allowed them to do so, but on the condition that the wayfarer must be able to obtain shelter and water"¹¹.

He also added:

"Ibn Saa'd reports that the Caliph Umar did in fact provide for travellers along the route between Medina and Mecca in order to help those who ran out of water. In Medina, Umar made a hostel available to house guests and passengers who had no place to stay. This hostel was equipped with a supply of food: flour, sawiq (a kind of dish composed of barley or wheat with sugar and dates) dates, and raisins"¹².

Dr. Al-Rashid ended by saying:

"We may conclude from these two texts that Caliph Umar took special care of the route between Mecca and Medina. Communications with them were to be easier, and he also wanted the route to be widely used"¹³.

During the Umayyad period (669-749 A.D.) improvements to the roads continued and helped in making travel easier for the public.

Both historical and archeological evidence substantiate these improvements. Roads were established (or improved) and provided with services like fire-signals and

mile stones to lead the travellers, and reservoirs and wells to supply them with water¹⁴.

The Umayyad mile posts were called "al-Amial Al-Marwaniah" or "al-Ahjar". Some of the available mile posts from that period are made from limestone or marble¹⁵.

During the ruling period of the Abbasids state (749-1258 A.D.) many travel related services were provided. Among the important ones is the contribution to the development of the road between Kufah and Makkah (Figure 2.2). In fact, the development and flourishing of the road was linked to the existence of the Abbasid states, where many successive caliphs contributed to the development of this road¹⁶.

The road reached its golden age at the time of Harun ar-Rashid and his wife Zubaidah, who paid impressive sums for the welfare and comfort of the road users¹⁷. Because of the involvement of Zubaidah in the provision of much of the facilities on this road, it was quite reasonable for this road to be named after her in appreciation, therefore the road is called "Darb Zubaidah", meaning the Road of Zubaidah.

Four centuries after the establishment of Zubaydah road, Ibin Jubair, a famous Arabian historian (1145-1217) travelled on this road and mentioned the facilities provided by saying:

"These water storages, water wells, and rest houses on this road from Baghdad to Makkah were built by Zubaydah..."¹⁸.

After the fall of Baghdad in 625 H - 1258 A.D the road became unsafe to travel on, however it was occasionally used by pilgrims caravans from Iraq, Iran, and the rest of the eastern lands. The road was still known in the 19th and 20th centuries as Darb Zubaydah, and some of its facilities are still in use by local tribes.¹⁹.

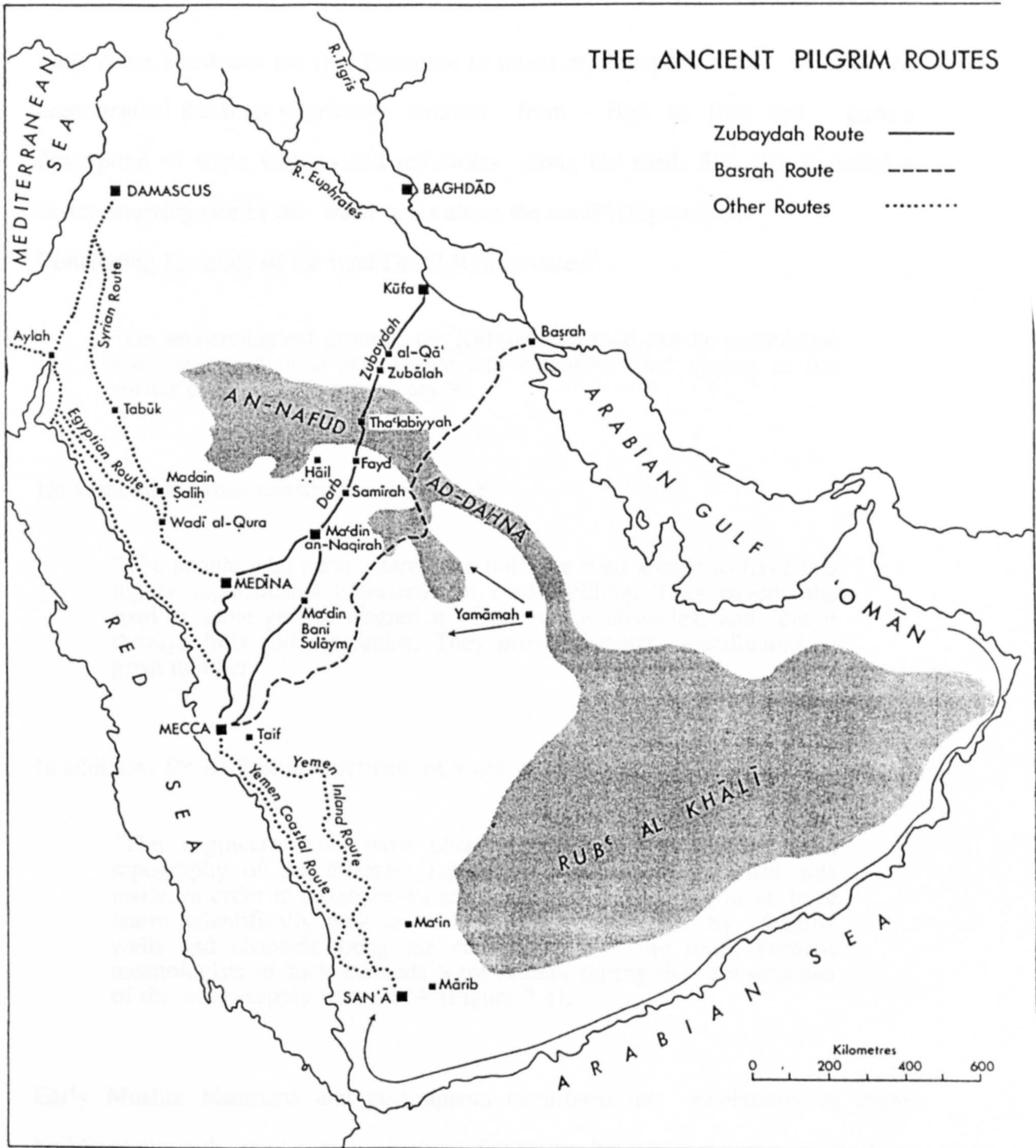


Figure 2.2:
Map of Zubaydah Route.

Source: Dr. Al-Rashid, 1980.

Lady Anne Blunt was the first European to travel on Zubaydah Road. In 1879 she accompanied the Iraqi pilgrimage caravan from Hail to Iraq and gave a description of some stations and reservoirs along the road. She also included a sketch showing one of the water tanks along the road²⁰ (Figure 2.3).

Concluding his study of the road Dr.Al-Rashid stated:

"On archaeological ground, the Kufa-Mecca road can be considered the finest and most remarkable and extensive road system in the earlier period of Islamic history"²¹.

He admired the road construction by saying:

"The people who administered and built the road appear to have had highly sophisticated knowledge of road building. They paved the road at some points, cleared it of dangerous obstacles, and cut it through hills and mountains. They provided water installations in great number."²².

In addition, Dr.Al-Rashid described the work in the water installations by saying:

"The engineers must have obtained a good knowledge of the topography of the different regions through which the road was made, in order to construct water cisterns and dams. They must have learnt scientifically how to extract underground water by digging wells and channels along the entire length of the road. Perhaps technologists in such methods were present during the construction of the water-supply network"²³ (Figure 2.4).

Early Muslim historians and geographers mentioned the availability of many buildings along the road namely: castles, fortresses, houses, and domes or shelters. From what remains of the buildings on this road, it is clear that they were of a considerable size and solid construction (Figure 2.5). In addition to building these shelters, khans and fortresses, roads were marked out with signs and provided with milestones to lead the travellers in their journeys²⁴.

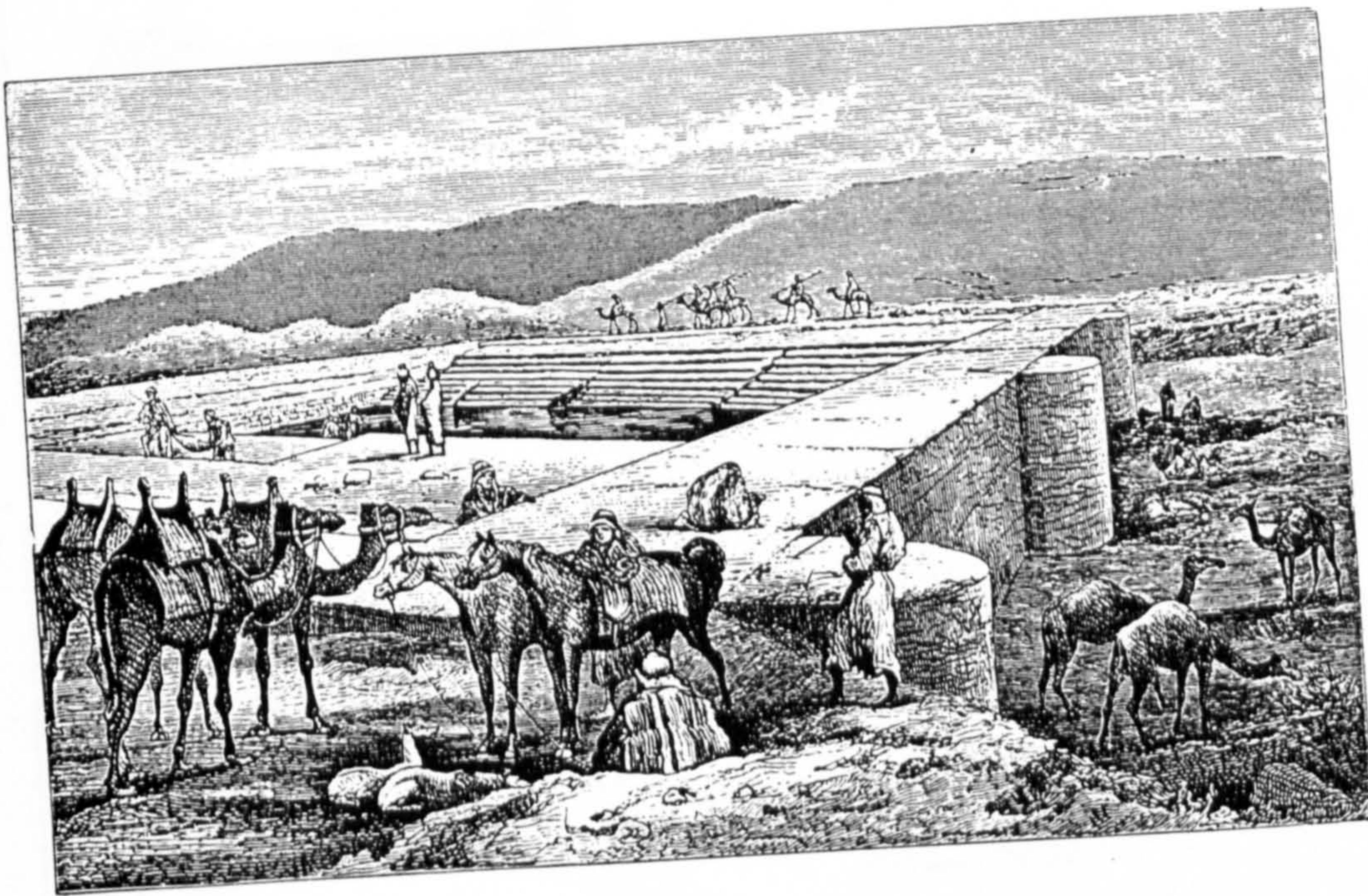


Figure 2.3:
Sketch of a Water-Tank Along Zubaydah Route, Drawn by Lady Ann Blunt.

Source: Blunt, 1881, Vol.2, p 80.

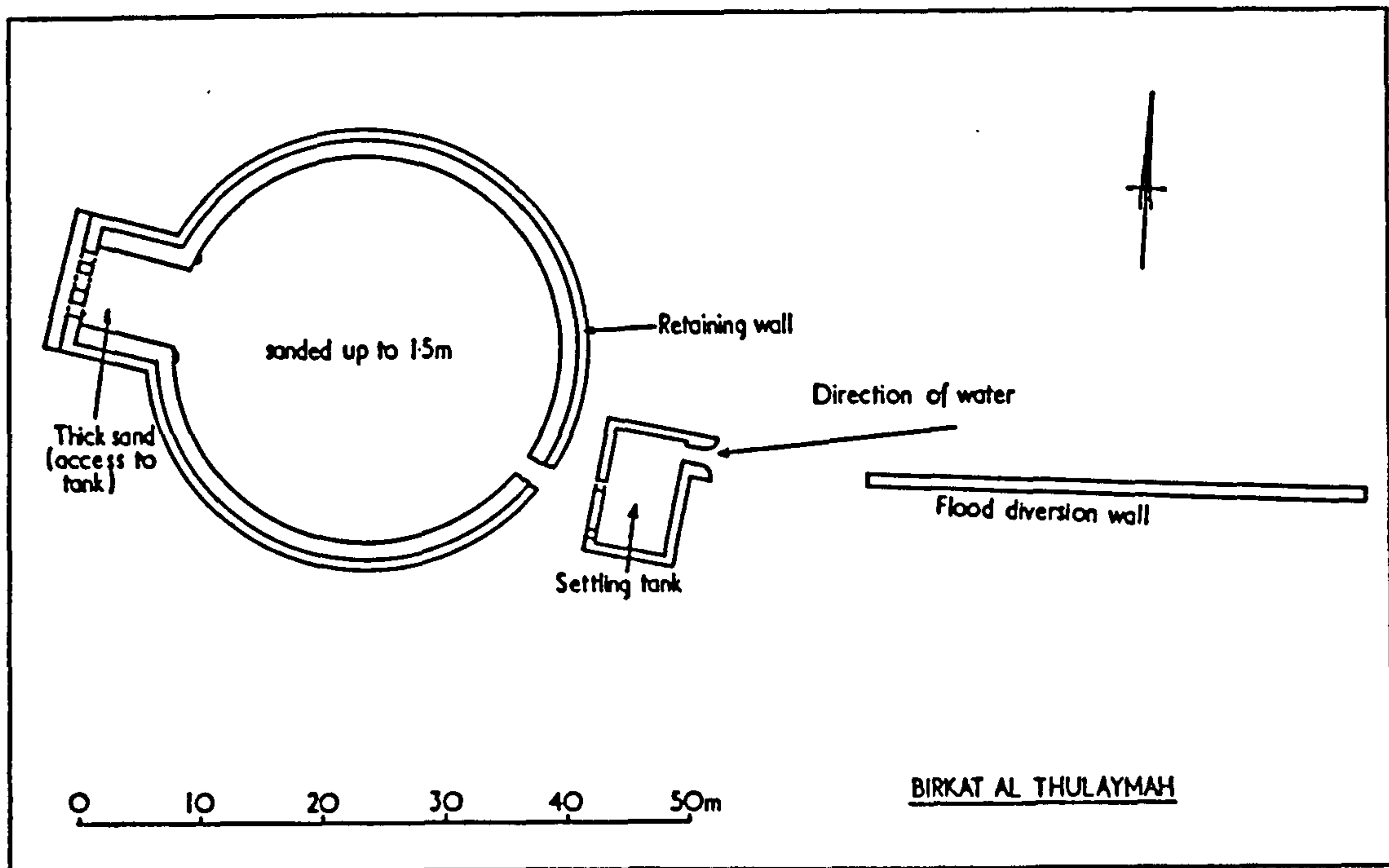
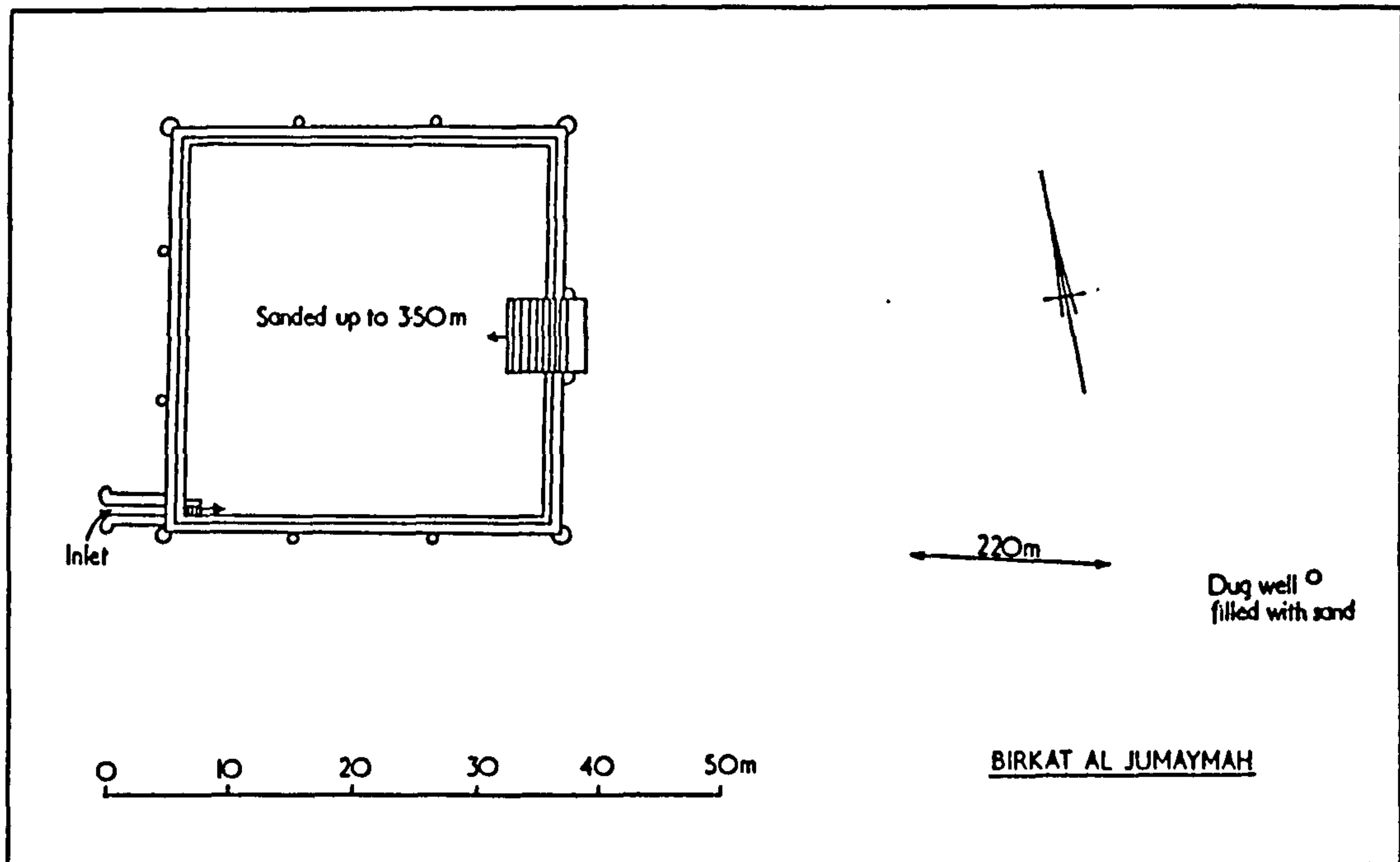


Figure 2.4:
Plans of the Water-Tanks of Al-Thulaymah and Al-Jumaymah, Two of Many Reservoirs Which Studded the Route of Zubaydah.

Source: Dr. Al-Rashid, 1980, p 156, 161.

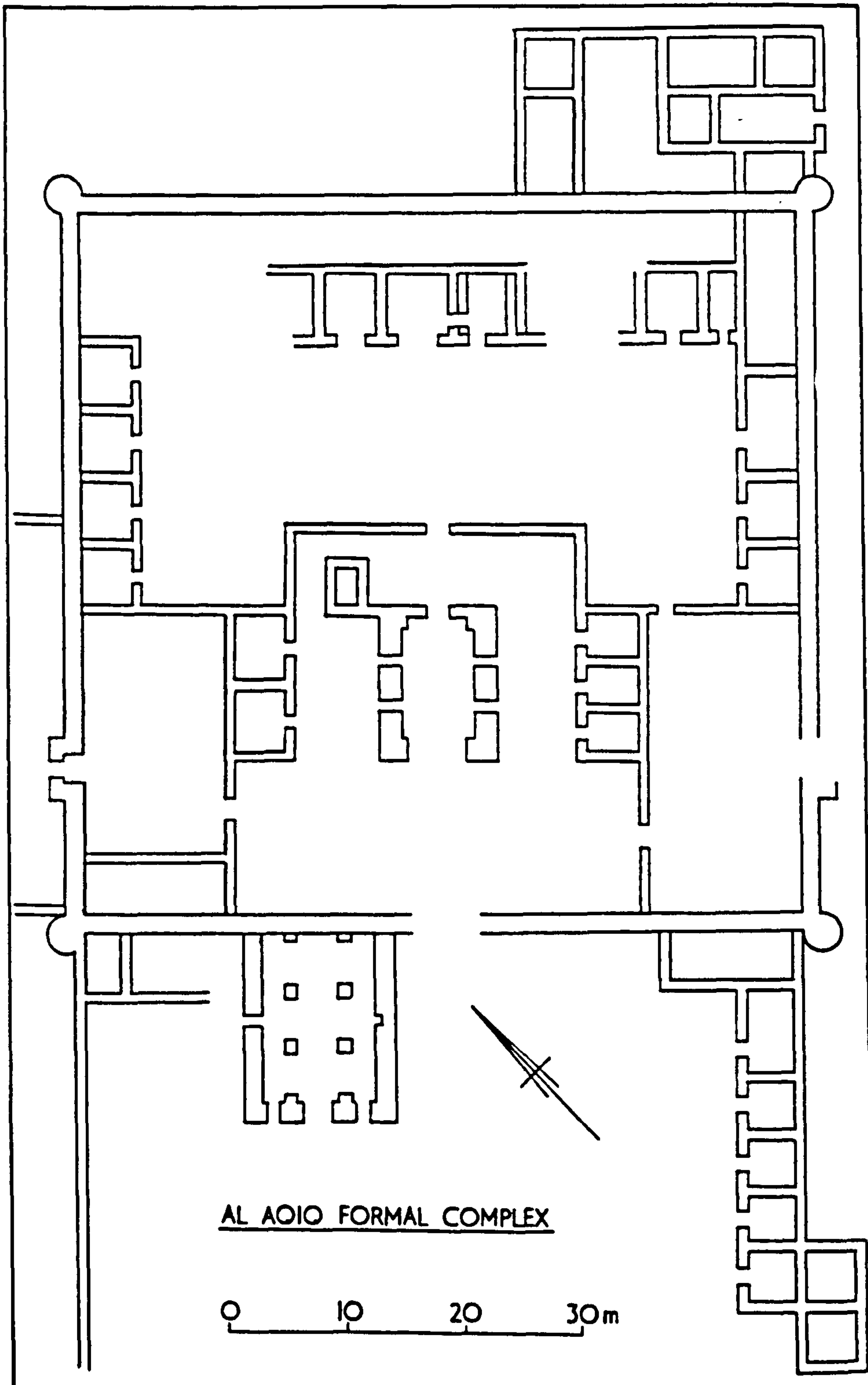


Figure 2.5:
Plan of Al-Aqiq Complex (Now in Ruins), One of Many Buildings of
Zubaydah Road Awaiting Archaeological Investigation.

Source: Dr. Al-Rashid, 1980, p 226.

Later Islamic states has also their contribution in building caravanserais (caravan overnight accommodations) along the main routes, to ensure hospitable accommodations, food, and water for the travellers. Jairazbhoy mentioned that:

"The medieval Islamic city was plentifully supplied with khans or public inns. Aleppo had at one time 38 khans, of which 12 were outside the walls. Damascus had 76, all within the walls. Isfahan had 50 beautiful caravanserais on one road"²⁵.

Caravanserais were often built as charitable foundations, endowed to provide free lodging to all travellers²⁶. In a caravanserai public endowment dated 1251, it was mentioned that it was to provide food and overnight accommodations for travellers without charge. That caravanserai included a mosque, a clinic, and bathrooms. It also had a large number of employees and a permanent maintenance crew²⁷.

During the Ayyubid state (1196-1271), many khans were built such as Al-Katife and Al-Kosair (second half of the 12th century), and Khan al-Arus (by Saladin), Khan Toman and Al-Etne (before 1234)²⁸.

Al-Etne was built on about 65kms distance from Damascus. Al-Etne village became famous because of this khan, it was mentioned by Muslim historians such as Al-Kalkashandy in his book 'Subh Al- A'ashaa'²⁹.

This khan had a fort like design, with a rectangular court from the inside. Composed of two stories, the upper one was to accommodate travellers and the lower one was occupied by goods and animals. The endowment statement was posted on the entrance, stating the internal bye-laws of this foundation³⁰.

The bye-laws indicated that the khan was endowed to serve Muslim and Non-Muslim travellers. Rental income from the two shops inside were to provide funds for the maintenance of this khan and any surplus will then go to benefit the needy travellers stopping in the khan; bread and shoes for them and shoes and farrier charges for their riding animals. The last lines of the inscribed message were a request from the patron to the users: to pray to God to forgive him³¹.

Although there were many caravanserais built during the medieval period , the Seljuks (1037-1327 A.D.) seem to be the most advanced builders both in the east (Iran, Transoxania) and in the north (Anatolia).

Among the best examples of Seljuk caravanserais or rabats in the east are Rabat Malik (1078 A.D) in Transoxania, and Rabat Sharaf (1120 A.D) between Khurasan and Samarkand (Figure 2.6).

The design concept of Rabat Malik is based on a central court surrounded by two stories of vaulted chambers. The main section of the outer wall was reinforced by groups of semicircular and quarter-round buttresses to give it strength³².

In Anatolia a different kind of caravanserai was developed in the 13th century. The Seljuks improved a network of ancient routes and extended it throughout Turkey. Like milestones, the caravanserais were built on 20-25 miles intervals, a comfortable day's journey for a laden camel. These caravanserais were among the most fascinating of all Turkish buildings³³.

In addition, these caravanserais were of great architectural quality compared to the Iranian caravanserais. They were very large, heavily fortified, with high, thick, well constructed stone walls. A magnificent gate-structure lead into a rectangular court; on the opposite side was a second gateway leading to an often monumental hall. Divided into several aisles, the hall was usually covered by flat or pointed roofs. The central aisle is raised and open to the sky in the middle³⁴.

Famous for their stone carving, the seljuks concentrated some of their most artistic work on the portals or entrances to both court and hall (Figure 2.7). In many caravanserais elaborate stalactite or honeycomb sculpturing fills the niche above the main entrances. Inscriptions on the gateways often give the date when the caravanserai was built together with the patron's name³⁵.



Figure 2.6:
Fine Geometric Patterns and Monumental Inscriptions on the Entrance Arch,
Rabat Sharaf.

Source: Hutt and Harrow, 1977, p 122.

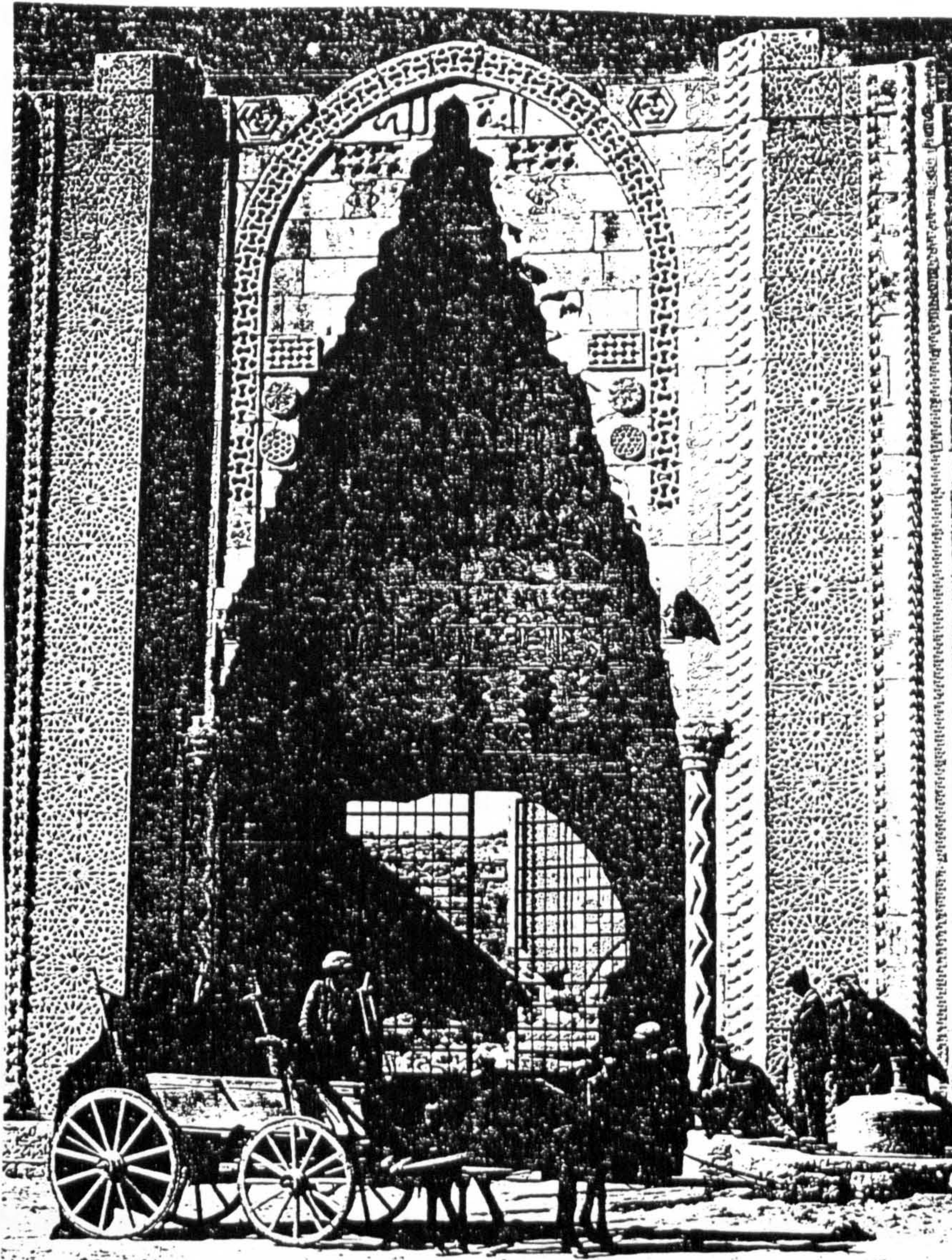


Figure 2.7:
Elaborate Decoration on an Anatolian Caravanserai
Entrance.

Source: Grube et al., 1978, p 81.

Large Anatolian caravanserais have a hammam (bathhouse), small mosque, private and public rooms, and kitchens. The court, around which most of the rooms are found, was often used as a market area. Camels were stabled in the hall, the wide raised platforms on either side of the domed centre aisle used for baggage, and for travellers in winters³⁶.

In addition, a staff of veterinary surgeons, physicians, cooks, blacksmith, muezzin to call the faithful to prayer, custodians and administrators provided their services free³⁷.

The best preserved examples of Seljuk caravanserais in Anatolia are: (1) Sultan Han (caravanserais) near Aksaray on the road to Konia (1229) (Figure 2.8); and (2) The smaller Sultan Han between Kayseri and Sivas, built between 1232-1236 (Figure 2.9).

Both caravanserais have large open courtyards and a great covered hall opening from the side opposite the entrance.

"The covered halls of both are very similar. A high central 'nave' with pointed barrel vaults open into aisles roofed by transverse barrel vaults. A crossing in the centre is covered by a domed lantern on spherical pendentives"³⁸.

In both cases the mosque is the most richly ornamented part of the caravanserai. It is centrally located in the courtyard and respectfully raised a few steps above the ground because it is the worshipping place³⁹.

Many travellers benefited from these caravanserais, as stated by Wagner.W. in her article:

"Sultans, merchants, pilgrims, envoys, rich and poor alike, Christians and Muslims, all stayed in these caravanserais free of charge, as they were 'vakifs' or pious foundations. The patrons who endowed these buildings were often the Sultans themselves but many emirs, grand vezirs and even occasionally women, for altruistic or religious reasons, also founded these institutions"⁴⁰.

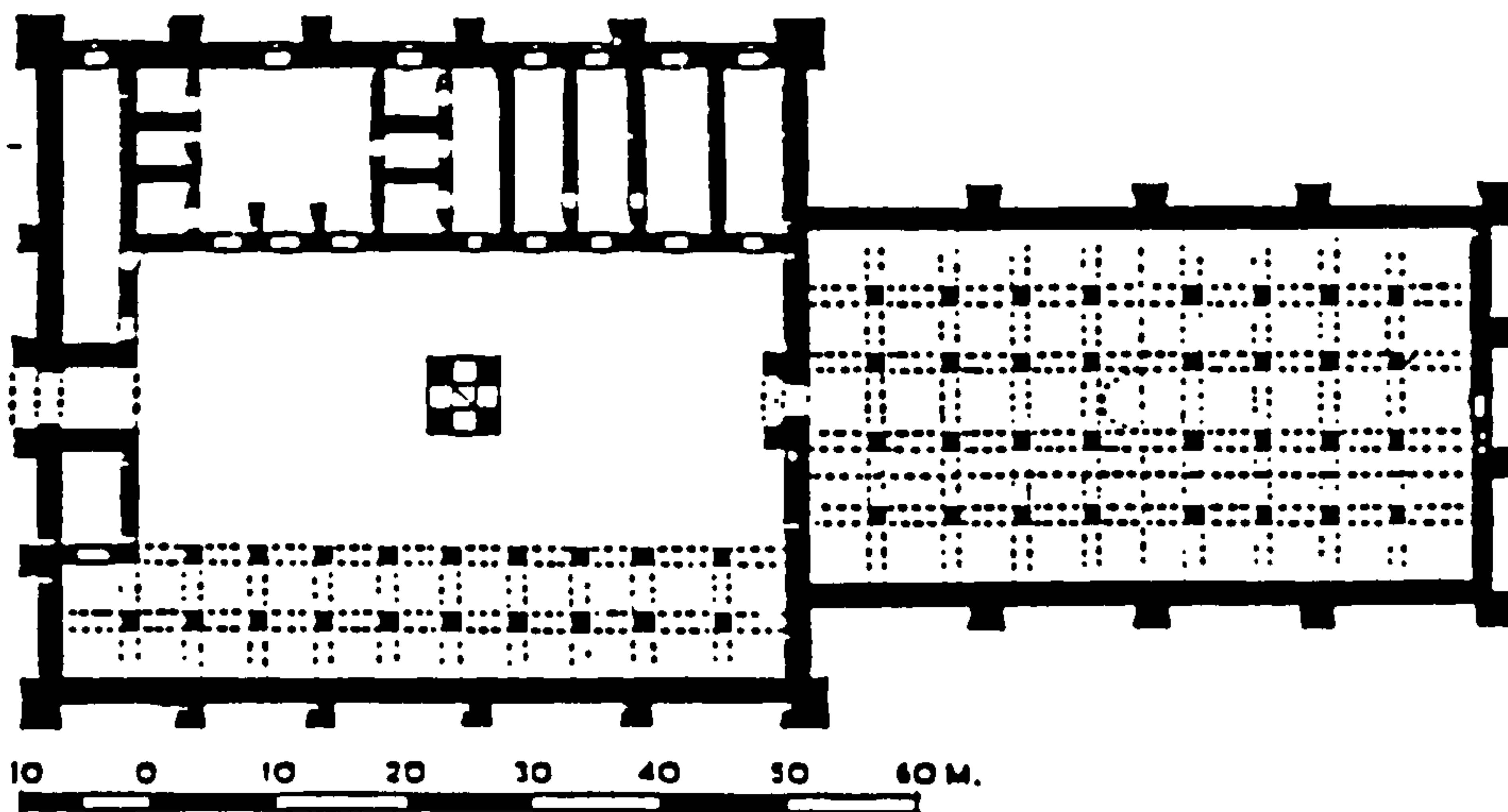


Figure 2.8:
Plan of Sultan Han Near Aksaray.

Source: Aukashah, 1981, p 340.

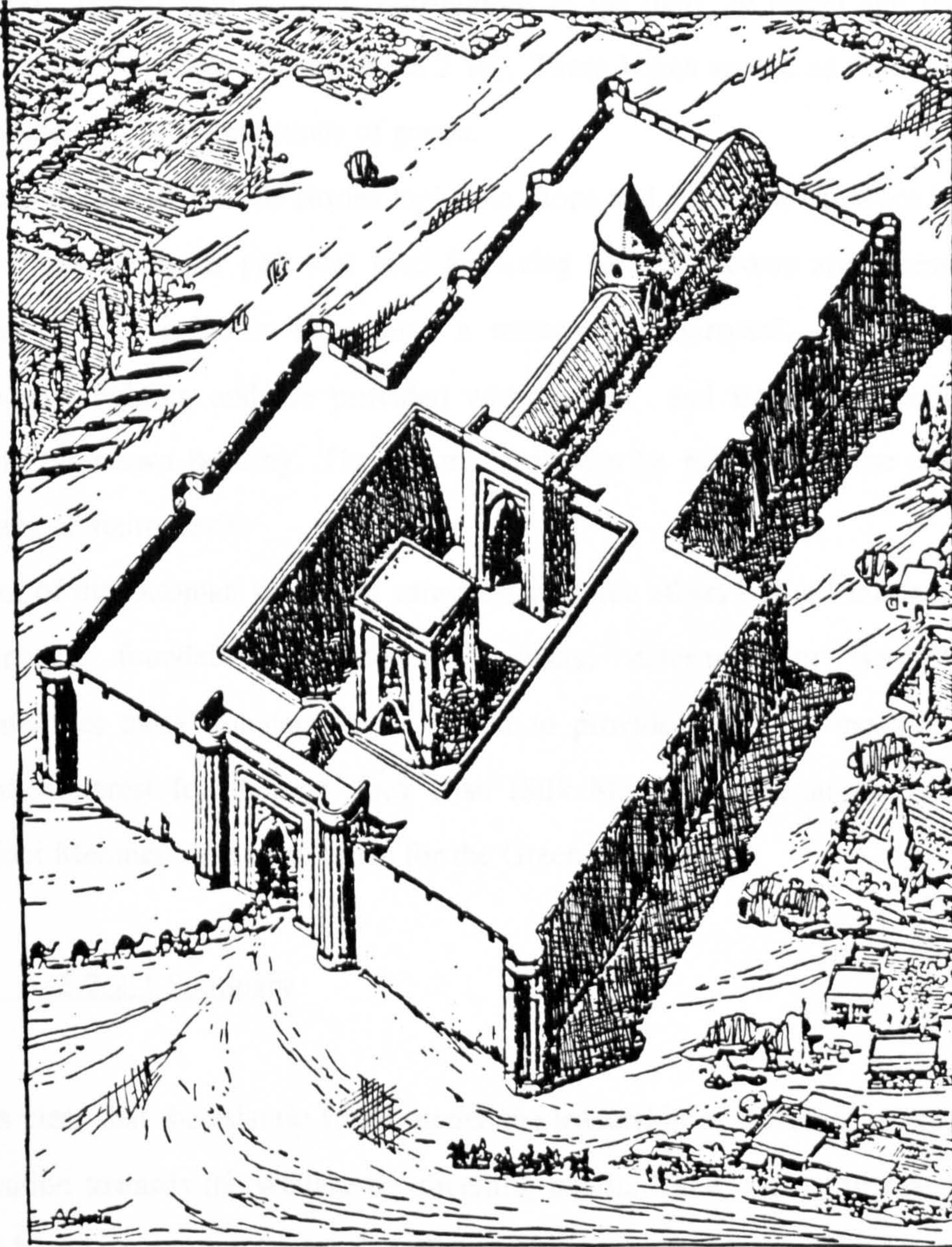


Figure 2.9:
Sultan Han, Between Kayseri an Sivas.

Source: Jairazbhoy, 1972, p 200.

The Ottomans (1300-1924) ruled most of the Islamic World during the modern period. Among their notable contributions in the field of travel and trade are the Khans built in large cities (Figure 2.10). These khans served as markets and stock exchange for different kinds of goods.

Khans were usually two stories high; the shops and storage areas were in the lower part, and the upper part was used for living area⁴¹. Rooms are accessible from open arcaded galleries set around a rectangular courtyard. These rooms have adequate lighting and are provided with hearths and shelves. Occupiers had to bring their own bedding. The upper levels can be reached via the courtyards by means of staircases⁴².

Most of the Ottoman khans and caravanserais, like others in the Islamic world, were charitable foundations donated by sultans, statesmen, or wealthy citizens. Sometimes these foundations were built to provide funds for mosques and other public interest foundations. Ipek khan (Silk Market), for example, was built by Celebi Mehmet to provide funds for the Green Mosque⁴³.

2.2.2.1 Summary

It is clear that the Islamic states, under the leadership of different rulers, have paid attention towards the welfare of travelling public. Their motive in that is religious and based on their understanding of the charity involved in serving the travellers. In one of the cases, that motive was recorded clearly on one of the inscription, which goes back to the year 916-917 A.D. This inscribed stone was found in a gold mine known as Mahd adh-Dhahab. K.S Twitchell, who discovered the inscribed stone, produced a photograph of it for G.C.Miles, who published it in 1953-4. The inscription is composed of twelve readable lines referring to the improvement of the road at the time of the Abbasid Caliph al-Muqtadir⁴⁴.

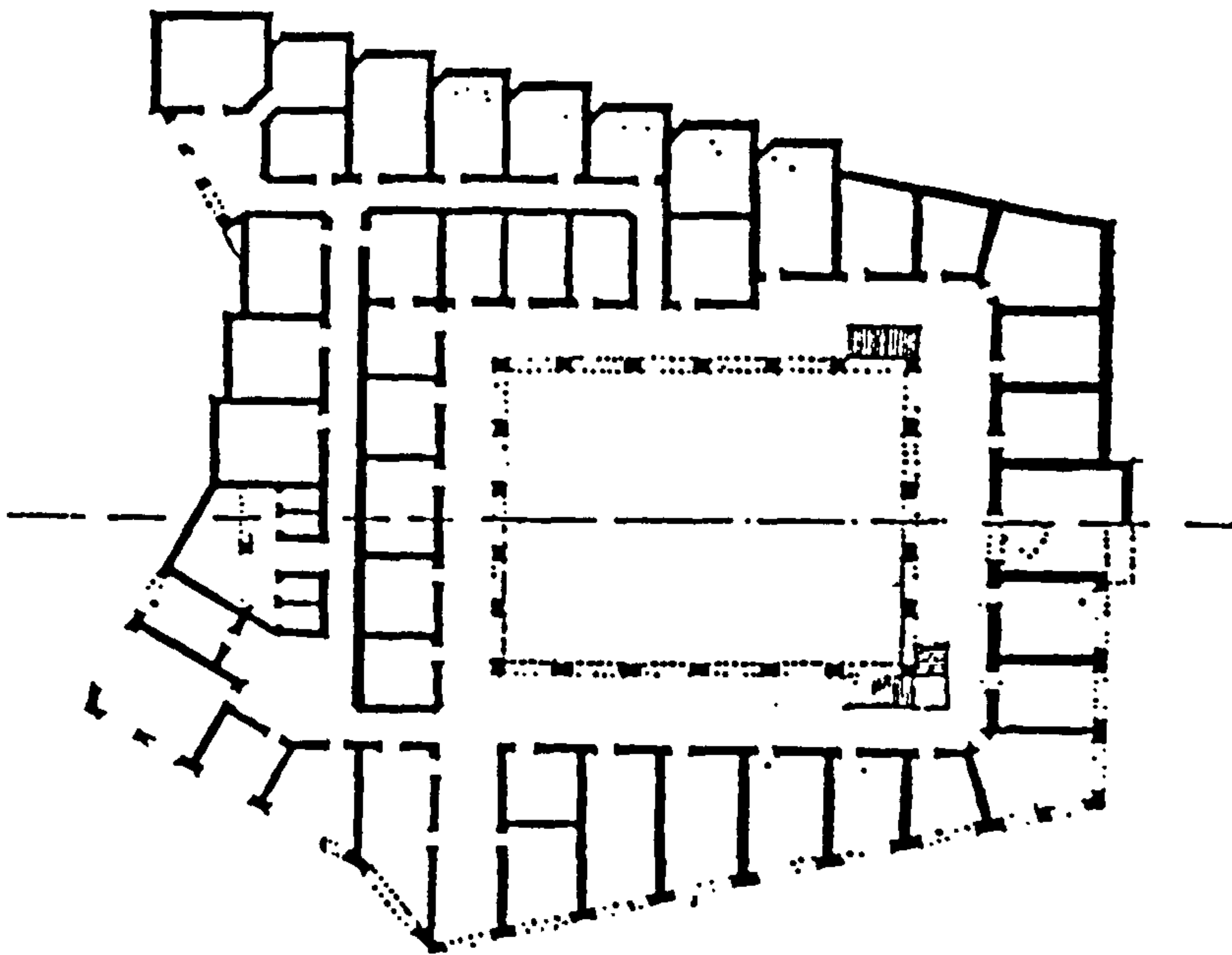


Figure 2.10:
Hasan Pasha Khan, Istanbul.

Source: Unsal, 1959, p 52.

The seventh line mentions the caliph motive, it reads:

"With the hope of meriting a rich reward in Allah's [God] sight"⁴⁵.

This kind of motive clearly shows the role and impact of the Islamic teachings towards making travel easier and the provision of services and facilities on road sides. However, that doesn't by any means distract from the prosperity or other advantages gained from promoting trade, education, pilgrimage, and similar travels; because these travels themselves were encouraged by the faith as was explained in the beginning of this chapter.

2.2.3 Early 'Gahwas' in Arabia

Towards the beginning of the 19th century, other kind of facilities were made available to travellers in the Hijaz region, now part of Saudi Arabia. These services are called gahwahs, meaning coffee-houses. Accounts of these services came in the writings of travellers who visited the region from as early as the year 1814.

The availability of gahwahs in the Hijaz region was perhaps related to Hajj (pilgrimage), in that Hajj (as an annual season) demanded the provision of such public service facilities in cities and between cities in some cases, as will be explained later.

In addition, the openness of this region to many pilgrims as well as immigrants from many parts of the Islamic countries helped the transfer of many social and cultural aspects including the gahwahs to the Hijaz region. The gahwahs were part of every day life in regions like Yemen, Syria, and Egypt; which were the immediate neighbours to the Hijaz region.

In Yemen for example, the coffee-houses for travellers service were mentioned as early as the year 1762 by a Scandinavian exploration team who visited the country.

In their travels between the different cities of Yemen, they used to spend the nights in the convenience of the coffee-houses of the road or the 'mokkaiat' as they were called in the Yemini dialect⁴⁶.

Gahwahs were also known in Syria, and they were the place for social gatherings and meeting people. Qasatly, N. stated that Damascus was abounded with gahwahs in the 19th century, where people meet for recreation and socializing with each other. He also mentioned that there was some modernized gahwas called 'cazinat' where a cup of coffee can cost twice the normal price⁴⁷.

2.2.3.1 Road Gahwahs

Non urban gahwahs were limited to two roads of the Hijaz region, these roads were: Taif-Makkah (88Kms) and Jiddah-Makkah (72Kms). The first road was used by pilgrims and travellers from the southern and eastern parts of Arabia, while the other was used by pilgrims and travellers who come by sea to the port of Jiddah.

The demand must have been greater for services on Jiddah-Makkah road, because several travellers reported the availability of more frequent services. The demand for services on this road had increased with the rise in the number of pilgrims coming by sea. This in turn was the result of the development of sea transport in the nineteenth century.

Pilgrims from East Africa as well as from South and Southeast Asia found it safer and probably less expensive to come to Jiddah by sea and then travel a short distance to Makkah, rather than travel across Arabia. The same was true for pilgrims from North Africa, Egypt and the Mediterranean region after the opening of the Suez canal in 1869⁴⁸.

The shortness of the distance (72kms) and the volume of travellers were among the main reasons for the availability of large number of gahwahs on Jiddah-Makkah road.

2.2.3.2 Gahwahs in Travellers Writings

Buckhardt, one of the earliest European travellers to Arabia, visited the Hijaz region where he rode from Taif to Makkah in September 1814. In that trip, he mentioned that he and his good companions had visited several coffee houses on the way. After his arrival to Makkah, it became his habit to spend the mid-day times in the city coffee shops⁴⁹.

In 1853 another traveller to Arabia, Sir Richard Burton landed at Yambu' on the Red Sea' east coast. There he went on a walk to explore the town and mentioned that it was abundant with coffee-houses. After that walk he sat down to rest and wait for his travel companions in one of the town' coffee- houses⁵⁰.

In August 1878, Charles Doughty, travelled to Arabia and accompanied a butter caravan from AlQasim region in central Arabia to Makkah in the west. On a distance less than two days travel from Makkah he described one of the gahwas of the caravan route, by saying:

"...here I saw a first coffee-station 'kahwa' of the Mecca country
..."

and described the place as:

"...a shelter of rude clay walling and posts, with a loose thatch of palm branches cast up."⁵¹.

Later in his travel between Taif and Jiddah, Doughty stopped in another cafe before his arrival to Jiddah, he described that by saying:

" we... descended to a kahwa and dismounted; leaving our theluls [riding camels] knee-bound, we went-in to pass the hot hours under the public roof" he also described the landlord who served them as a "pleasant man". Near that cafe there was a dugged well, where he saw nomads watering their camels, and on the brow above the cafe there was a station for the dromedary police. It must have been a very social stop for Doughty in that cafe. Because as he left the cafe when the sun was going down, he was accompanied by " a merry townsman of Mecca" and his son, who rode along with them to Jiddah⁵².

Moreover, Doughty reported that the pilgrimage route between Makkah and Jiddah was studded with coffee-houses and there is a gahwah at every few miles of this short pilgrimage route⁵³.

General Ibrahim Rifa'at Basha was the guards' commander of the Egyptian' pilgrimage expedition in 1901, and the Ameer (leader) of the expeditions of 1903, 1904 and 1908. In his book, *Mir'at Al-harameen* (The Mirror of the Two Holy Mosques), he described his travel between Jiddah and the holy city of Makkah and the coffee-houses of the road, he mentioned in his book that:

"there are about fifteen gahwahs on the road for the travellers rest, and the service of tea and coffee⁵⁴.

In a location called Jaradah, General Basha and the Egyptian pilgrimage caravan had their first stop, he described the gahwah there as " spacious and built with stones" and has proper roofing, and was located near two water wells. After an almost one hour rest they continued their travel towards the holy city of Makkah⁵⁵. Later, about sunset time the Egyptian caravan arrived at Bahrah where they spent the night in this town mid-way between Jiddah and Makkah. General Basha described Bahrah in his book, and mentioned that it has many gahwahs and huts for travellers as well as yards to keep their camels⁵⁶.

After leaving Bahrah they passed some gahwahs on their way and stopped later for forty minutes to rest in a gahwah called 'gahwat Salem' or 'gahwat Al-bazam'. After one hour and twenty minutes of travel they passed by another gahwah called 'gahwat Al-bustan' (the coffee house of the grove) which was surrounded by Zizyphus trees⁵⁷. The gahwah was so named because of the abundance of trees.

The last gahwah on this road was 'gahwat Al-mua'lim' on a mile distance from the holy city. It is in this station that the representatives of the holy city receive the pilgrimage caravans and where pilgrims meet their mutawifs (pilgrimage guides).

General Basha said:

"There we found our mutawifs waiting for us, and they gave us presents of watermelon, pomegranate, and water from the well of Zamzam. "⁵⁸.

General Basha has also mentioned that there are ninety five traditional gahwahs in the city of Makkah, forty in Jiddah, and thirty six in Madinah⁵⁹.

In addition, he described the traditional furniture of the gahwahs of that day. He said:

"they have high seats of wood and nets made with twined coir and braided date palm fronds".

He also added that:

" in the gahwahs they drink tea as well as coffee, they add to the coffee cardamom, cloves, or black cumin which gives it a good taste. The 'shishah' (water pipe) prepared with heated tobacco is also served , and used heavily by the gahwahs users "⁶⁰.

General Basha has also reported that one of his friends went from Makkah in a visit to Taif and after his return he described one of the gahwahs called 'gahwat shaddad' on the road between Taif and Makkah. He said about this gahwah

location, " it is one of three gahwahs available in the wadi of Kharif Ar'raas." he also described the gahwah by saying:" It is compound of four isolated huts, their diameter is 3.5 meters and their height is 1.5 meters." he added "we stopped to rest in one of the huts waiting for the noon time and its hot winds to pass."⁶¹.

In 1918, forty years after Doughty and ten years after General Basha , Imam Mohammad Rida went on a pilgrimage and travelled between Jiddah and the holy city of Makkah, on the same road where Doughty and General Basha stopped for rest and service. Imam Rida and his companions have also used the services of the gahwas abundant on this road. In fact they stopped in six of these gahwahs for rest, sleep, or obtain food and drinks. In his notes, Imam Rida gave a brief description of the road gahwas by saying:

"they are huts for the travellers' lodging, resting, eating, or having tea and coffee."⁶².

Bahrah was an important stop on this pilgrimage route between Jiddah and Makkah.

Imam Rida stopped twice in Bahrah and described its gahwas, he said:

"the gahwahs are located adjacent to the main road ... they were oriented to serve men, especially those men who could not manage without the food, coffee, and the services provided in these cafes or those who have every thing and just want to rest."⁶³.

In his return from Makkah after the pilgrimage he stopped again in Bahrah, but as he was accompanied by his mother and sister, they avoided the cafes and went to the houses called 'eshash' or thatch houses which were located behind the cafes, He found these thatch houses to be much better than what he wanted. They were houses with rooms, toilets and fences separating each house from the neighbouring ones; which gave his family the total privacy that they wanted⁶⁴.

2.2.3.3 Summary

From the previous presentation, we can assume that gahwahs were available in the Hijaz region from the beginning of the last century or even earlier than that due to lapse in travellers writings. Gahwahs were available on the short distance roads of the region: namely Jiddah-Makkah (72Kms) and Taif-Makkah (88Kms); and within the cities themselves.

Road gahwahs provided shelter for the travellers from the elements of the environment such as the mid-day high temperature. In addition they were social places where travellers could enjoy relaxation, food and drinks under one roof. In general, gahwahs were male-oriented facilities, although some gahwahs had separate family accommodation.

Gahwahs construction was different from one area to another. However some of those on Jiddah-Makkah road were large in size with strong stone walls and adequate roof structure. On the other road, Taif-Makkah a different construction technique was used: the gahwah was made of four separate huts, circular in shape with clay walls and posts and loose thatch of palm branches cast up.

The furniture used in the gahwahs was the traditional high seats made of wood frames and nets, the nets were made with twined coir and braided date palm fronds.

These gahwahs of the 19th century were the first generation of commercial travellers' services. The second generation of services, which developed in the 1950's, arose in response to the changes in mobility, the introduction of motor vehicles and the development of roads in the Kingdom, as will be explained in the following chapter.

2.3 Conclusion

From the historical Study, one can see the development of travellers services in the Arabian Peninsula and the rest of the Islamic world. The early traveller's services in the peninsula were towns, desert oases, or tents of generous hosts where travellers could find water, shade, and protection.

Islamic teachings later inspired the concept of traveller's services when some of the major Islamic duties were amended to ease travel. In addition, the same teachings promised rewards and made it a charitable act to clear the way of obstacles and to provide travellers with water and assistance.

These teachings were translated later into building khans and caravanserais on the routes between cities. These caravanserais were usually built by the state as charitable foundations endowed to provide free lodging to all travellers. Caravanserais usually contain a central courtyard, mosque, kitchen, sleeping rooms, bathrooms, and stables to house the animals.

Caravanserais were in general beautiful and functional buildings designed to suit the users of their time and their modes of transport (riding animals). Moreover, their locations were properly chosen with special consideration for the intervals between them, and taking in account the capacity of the laden camels.

In the beginning of the 19th century (or perhaps earlier) new commercial services came to existence in the Hijaz region of today's Saudi Arabia. These services are called gahwahs, they provided shelter for the travellers and supplied them with food and drinks. It was clear from the previous discussion in this chapter that the gahwahs were constructed using indigenous building materials, such as stones, clay, and wood, a concept which should be considered in contemporary service areas, because it will produce more harmonious design that would blend successfully with its surrounding. Another important aspect is also the interior and

furniture design of the traditional gahwahs, which could be incorporated successfully in today's service areas as part of the past services heritage. It is unfortunate that information is scarce about the design and landscape aspects of traditional gahwahs in the travellers writing, however, it is important to mention that some of these gahwahs were definitely plentiful with trees such as 'the gahwah of the grove' mentioned earlier in this chapter.

These first gahwahs of the 19th century were followed by the gahwahs of the transitional period which witnessed the introduction of motor vehicles and roads in the Kingdom, as will be explained in the following chapter.

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CHAPTER THREE

CHAPTER THREE

GENERAL BACKGROUND

3.1 Mobility in Saudi Arabia.

- 3.1.1 Motor Vehicles.**
- 3.1.2 Change in Mobility.**
- 3.1.3 The Motor Vehicle Stock and Imports.**

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3.3 Motorists Services.

- 3.3.1 Early Motorists and their Expectations of Services.**
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3.4 Summary.

CHAPTER THREE

GENERAL BACKGROUND

This chapter will discuss some details of the general situation in Saudi Arabia, in relation to its mobility, roads development and some background on travellers services after the introduction of the motor-vehicles in the Kingdom.

3.1 Mobility in Saudi Arabia.

This section will examine three main areas of the mobility in Saudi Arabia, these are: the introduction of the motor-vehicles, the gradual change in mobility, and the motor vehicle stock and imports to the country.

3.1.1 Motor Vehicles in the Kingdom

The first combustion engine in the world was invented in 1860. Towards the year 1900 the experiment in motor vehicles manufacture reached a high level, which encouraged the spread of motor vehicles. In 1910 there were 107,635 motor vehicles in Great Britain and 468,497 vehicles in the United States¹.

In the Middle East, motor vehicles seem to have been used in Egypt before any other part of the region including Saudi Arabia, as can be understood from the establishment of the road department in 1913 and the establishment of the Ministry

of Transport six years later. Iraq had less than half a dozen vehicles in 1914 and in Greater Syria the first motor car in the interior reached Aleppo in 1909².

The first use of motor vehicles in what is now known as Saudi Arabia occurred about the time of the first World War. The Turkish military ruler of Madinah had a private car between 1910 and 1916. Also the Sharif Hussain, ruler of Hijaz at the time of the first World War, used a private car in his travel between Makkah and Jiddah³. This was before the formation of the Kingdom of Saudi Arabia, which took place in 1932. In the eastern part of Saudi Arabia, motor vehicles were first used in September 1933 when oil geologists from Aramco used two government cars and a truck which was brought from Jiddah. Motor vehicles were also used in the capital Riyadh, in the middle of Arabia, in the late 1920's or the early 1930's⁴.

3.1.2 Change in Mobility

It is obvious that as motor vehicles were introduced in the 1930's and 1940's, they were used along side the traditional modes of transport. The advance of time meant a change in the proportions of traffic carried by the traditional means and the modern means of transport. In the early days, the contribution of automobiles was much smaller than that of the camels, but gradually camels lost their share of traffic to the motor vehicles.

A good record of the period of transition in mobility was discovered by the author in a letter sent from the manager of the Arabian Automobile Company in 3-12-1360 A.H (1941) to the Ministry of Finance (Appendix D.1). Because the company was formed in the late 1930's to handle the hajj traffic, its manager wrote to the ministry complaining that camel riders were using the Makkah-Jiddah automobile's road causing accidents to the travelling vehicles. So he asked the Ministry to take the necessary steps that would discourage camel riders from using this road⁵.

Six years later, in 1947 the British Naval Intelligence Division of Western Arabia and the Red Sea wrote describing the mobility in Saudi Arabia:

"Land routes have become increasingly important since the automobile began to replace the camel as means of transport, though the camel has by no means yet been entirely supplanted"⁶.

The progress in road construction in the western, eastern, and central regions of the Kingdom in the 1950's and later in the other regions pushed the transition in mobility further and brought the end of traditional camel travel in the Kingdom.

3.1.3 The Motor Vehicle Stock and Imports

The first estimate of motor vehicles in the Kingdom was made in 1961 by a consultant firm called Sauti. They estimated the number of cars to be 14,000 and the number of trucks to be 8000, a total of 22,000 motor vehicles. Joubert, the chief of the U.N advisers working for the Roads Department in Riyadh made the second assessment in 1965, he found the numbers to be 16,000 cars and 12,000 commercial vehicles, a total of 28,000 motor vehicles. Both Sauti and Joubert used the vehicle import figures as the base for their estimates⁷. Abdo, A.S. made the third estimate in his Phd research. He used the same approach to estimate the number of vehicles in the Kingdom, but he also took into account the conditions of roads, driving, traffic and types of vehicles used in Saudi Arabia as well as the average vehicle lifetime in some other underdeveloped countries. On this basis, he estimated the number of vehicles in use in 1966 to be 35,000 passenger cars, 22,400 trucks, and 2,800 buses, a total of 60,200 vehicles⁸.

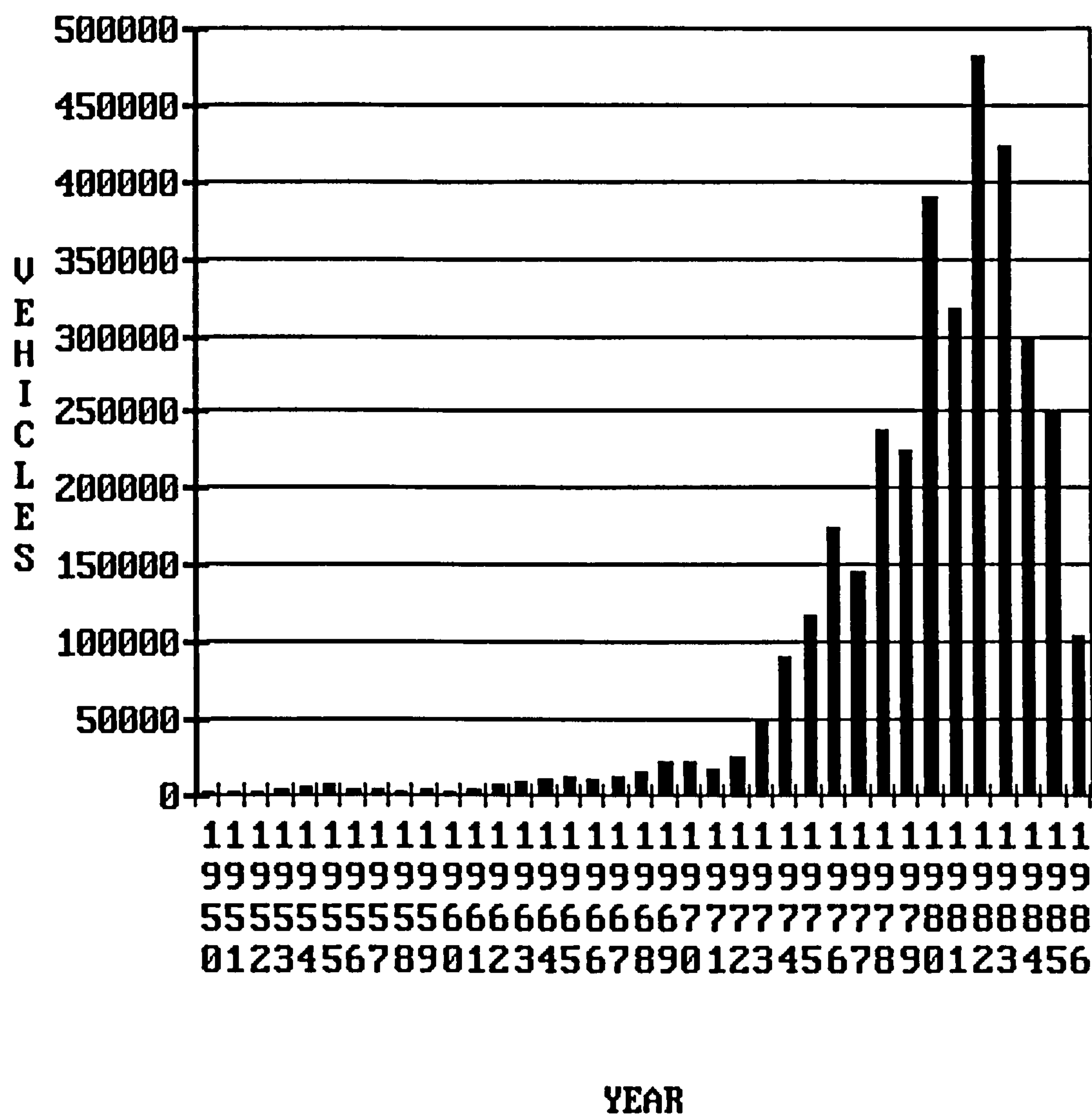
A more reliable indicator of the transportation development in the Kingdom, are the figures of the motor vehicles imported themselves because they reflect the annual trend in cars importation growth.

Motor vehicles were first imported to Arabia in 1926 via the port of Jiddah, the importers were J.Philby and a native citizen called Ali Al Ammari. This was the same year of the conquest of the city of Jiddah by King Abdulaziz⁹. The numbers and types of vehicles imported during that year and until 1949 is unknown. However, the Ministry of Finance statistical books issued annually provide the required figures on the motor vehicles imports for the period from 1950 to 1986 (Figure 3.1).

Examining these annual figures of vehicles importation, they clearly show that the highest number of vehicles imported was in 1982. It is interesting to mention here that 1982 was also the year of maximum government expenditure. Both government expenditure and the number of vehicles imported declined together after 1982 (Figure 3.2), which proves that there is a strong relationship between the general economic growth in the country and the number of imported vehicles. This is because economic growth increases the purchasing power of the government as well as the private sector; thus increasing the spending on many goods, including new motor vehicles.

To examine the development of the importation of vehicles to the Kingdom, a comparison was made between the number of vehicles imported in 1950, (the year of the earliest vehicles imports' statistics) and those imported in 1982, that comparison showed an increase from 3,390 vehicles in 1950 to 482,734 vehicles in 1982, a 14127.35 % increase in vehicles importation, and corresponds to the general transportation and economic growth witnessed by the Kingdom in these 32 years.

FIGURE 3.1: THE NUMBER OF VEHICLES IMPORTED ANNUALLY TO SAUDI ARABIA



That increase in vehicles importation runs parallel to the increase in the length of roads constructed in the same period, rising from only 111 kms in 1950 to a total of 21,926 kms in 1982, and government expenditure which rose from SR. 490 million in 1950 to SR. 313,400 million in 1982. However, it should be emphasised here that the year 1973 was the turning point in the growth of vehicles importation as a result of the boom in oil prices. This was reflected in both government expenditure and vehicles importation to the Kingdom in that year. Government expenditure rose from SR.13,200 million in 1972 to SR.22,810 million in 1973, an increase of 72.8%; whilst the growth in the number of vehicles importation rose from 27,039 vehicles in 1972 to 51,134 vehicles in 1973, an increase of 89.1% (Figure 3.1).

After 1982 the number of imported vehicles declined as a result of the general decline in government expenditure due to the crisis in oil prices. A comparison between the number of vehicles imported in 1982 and 1986 show a decrease from 482,734 in 1982 to 106,171 in 1986, a reduction of 78.01% (Figure 3.1).

3.2 Roads in the Kingdom

The construction of modern roads in Saudi Arabia started in 1935, when the Public Works and Minerals Department was established. However the construction of the first asphalt road was in 1950 (Figure 3.3a), which marked a significant technological step in the country's development. That road was part of a modern network of asphalt roads built by the Arabian American Oil Company (Aramco) in its areas of operations in the Eastern region of the Kingdom¹⁰.

In 1952 the Ministry of Transport was formed and took full responsibility for the nation's roads. In that same year the government started the construction of the Jiddah-Madinah road, which was completed in 1955 (Figure 3.3b), The importance of this road comes from the fact that it transported pilgrims between the two holy

cities of Makkah and Madinah through Jiddah. As a result of this road the travelling time between Jiddah and Madinah was reduced from an average of two days to an average of 6-8 hours¹¹.

In 1955 there were two separate modern road networks. One in the west which consisted of the two roads between Jiddah, Makkah and Madinah and a 30 km stretch in Taif, a total of about 527 kms. The other network was in the east which consisted of 400 kms of modern roads connecting the oil fields with the main ports and administration centres (Figure 3.3b). The two small networks were separated by a distance of about 1500 kms of desert with no asphalt roads¹².

The first network in the eastern part of the Kingdom came as a result of the development of the oil industry, the back bone of the country's economy, while the second one in the western region was created for religious purposes, to make the visit to the holy places easier for the pilgrims.

In 1955, and 1956 modern roads were established in the Riyadh region, in the centre of the country. These roads linked Riyadh, the country's administrative and political capital with the surrounding agricultural areas, creating the third network in the middle of the east-west axis¹³ (Figure 3.3c).

The next stage was the link between these individual networks on the east-west axis, the first link occurred in 1961 between the Eastern Province and the Riyadh region (Figure 3.3d). After that linkage, the expansion of the Riyadh network was oriented to the west, until the linkage with Taif in the Western Region was achieved in 1965. That linkage between Riyadh and Taif consequentially meant the total linkage between the three regions and the creation of the east-west axis¹⁴ (Figure 3.3e).

The steps taken in the development of the new roads conformed with the Ministry of Transport's main programme, in which the Ministry of Transport considered implementing the road development in the following phases:

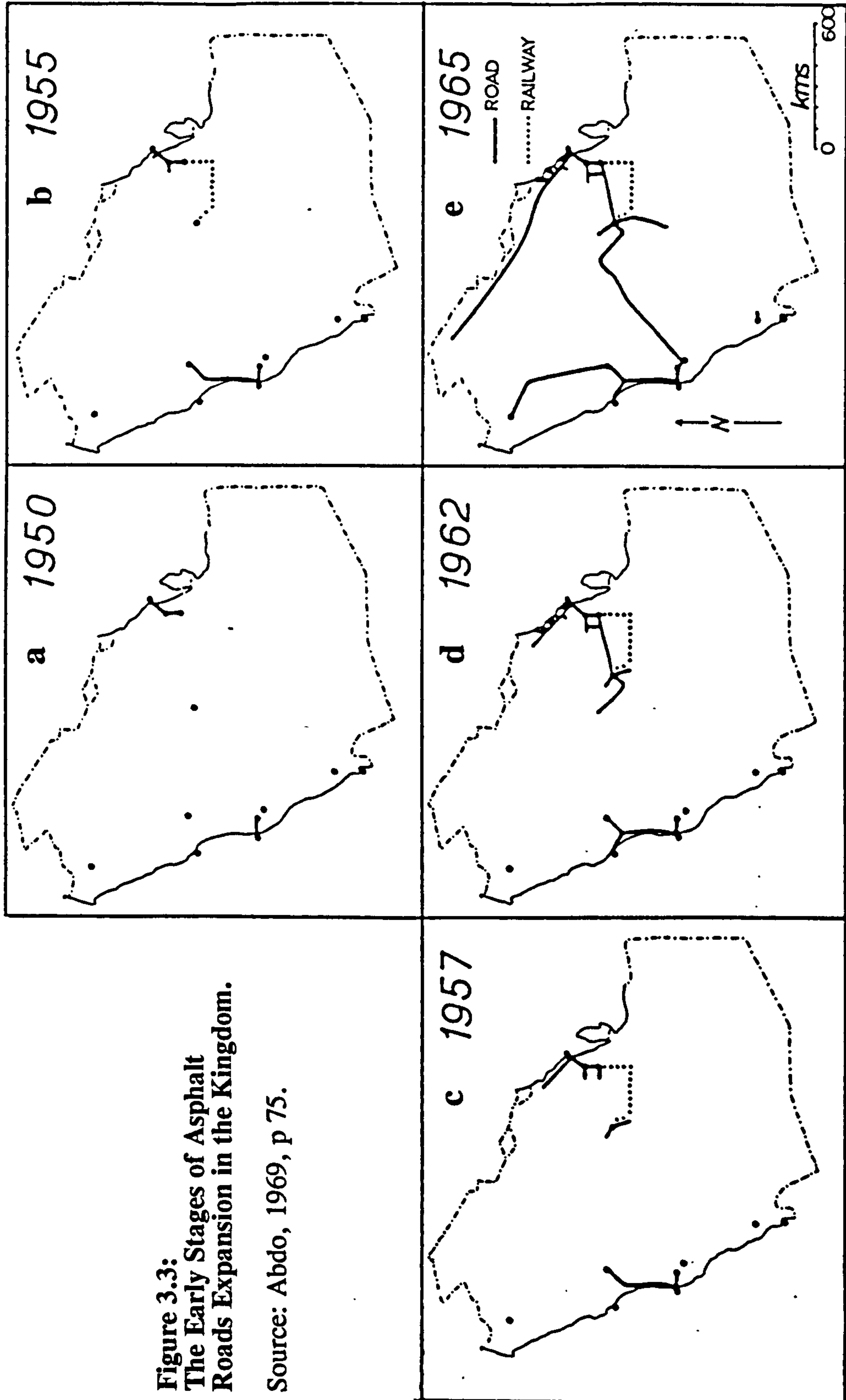


Figure 3.3:
The Early Stages of Asphalt
Roads Expansion in the Kingdom.

Source: Abdo, 1969, p 75.

Phase 1 : Completing the connection of main regions, and ensuring that roads would pass through the maximum number of towns and villages.

Phase 2 : Shortening travel distances between the main cities.

Phase 3 : Widening and constructing roads where anticipated future traffic indicates that they will eventually be upgraded to dual carriageways or expressways. The country's major motorways came in this third phase, as will be explained below.

Phase 4 : Improving the standard of services, and developing safety features for the roads¹⁵.

For the fulfilment of Phase 1 of the main program, modern roads penetrated from the centres of the east-west axis both northwards and southwards. From the Eastern Province, for example, the network expanded north to Turaif on the border with Jordan. From Madinah on the Western end of the east-west axis, the network expanded north to Tabuk in 1964. From Riyadh at the centre of the east-west axis, the network expanded south, via a 541 kms road constructed in 1968 to Wadi Ad Dawaser along the Aflaj region. By the end of 1970 the network length was 8021 kms¹⁶ (Figure 3.4).

Phase 2 of the main Programme was introduced in 1970. This Phase was concerned with constructing direct routes between major cities to reduce distance and travel time. The travelling distance between Riyadh and Taif, for example, was reduced by 122 kms during this phase¹⁷.

To keep up with the increasing national development in the Kingdom (which exceeded the capacity of several important roads), systematic field surveys were made at various locations along the main road network in preparation for Phase 3. The data obtained in these surveys were used in the construction of 4000 kms of dual carriageways and motorways in the late 1970's, increasing the network total length to 20,238 kms in 1980¹⁸ (Figure 3.4).

These new roads were distributed in many regions of the country and were ranging in length from a few kilometres to hundreds of kilometres, depending on their location whether in urban short distance or non urban long distance.

The Kingdom's main long distance motorways, which connect the major regions of the Kingdom, were also constructed in this 3rd Phase. The construction of Dammam-Riyadh and Makkah-Madinah motorways, were started in 1981; and were completed in 1986 and 1987 respectively. The construction of Riyadh-Qasim motorway came in 1982, one year after the start of the two previous motorways. The construction of the longest motorway, Riyadh- Taif, started in 1980¹⁹ (Figure 3.5).

In 1980 there were 20,238 Kms of road compared with 28,105 Kms in 1986. This represents an increase of 7,867 kms or 38.87% . This includes dual carriageways and motorways, first built in the late 1970's and which continued through the 1980's (Figure 3.4).

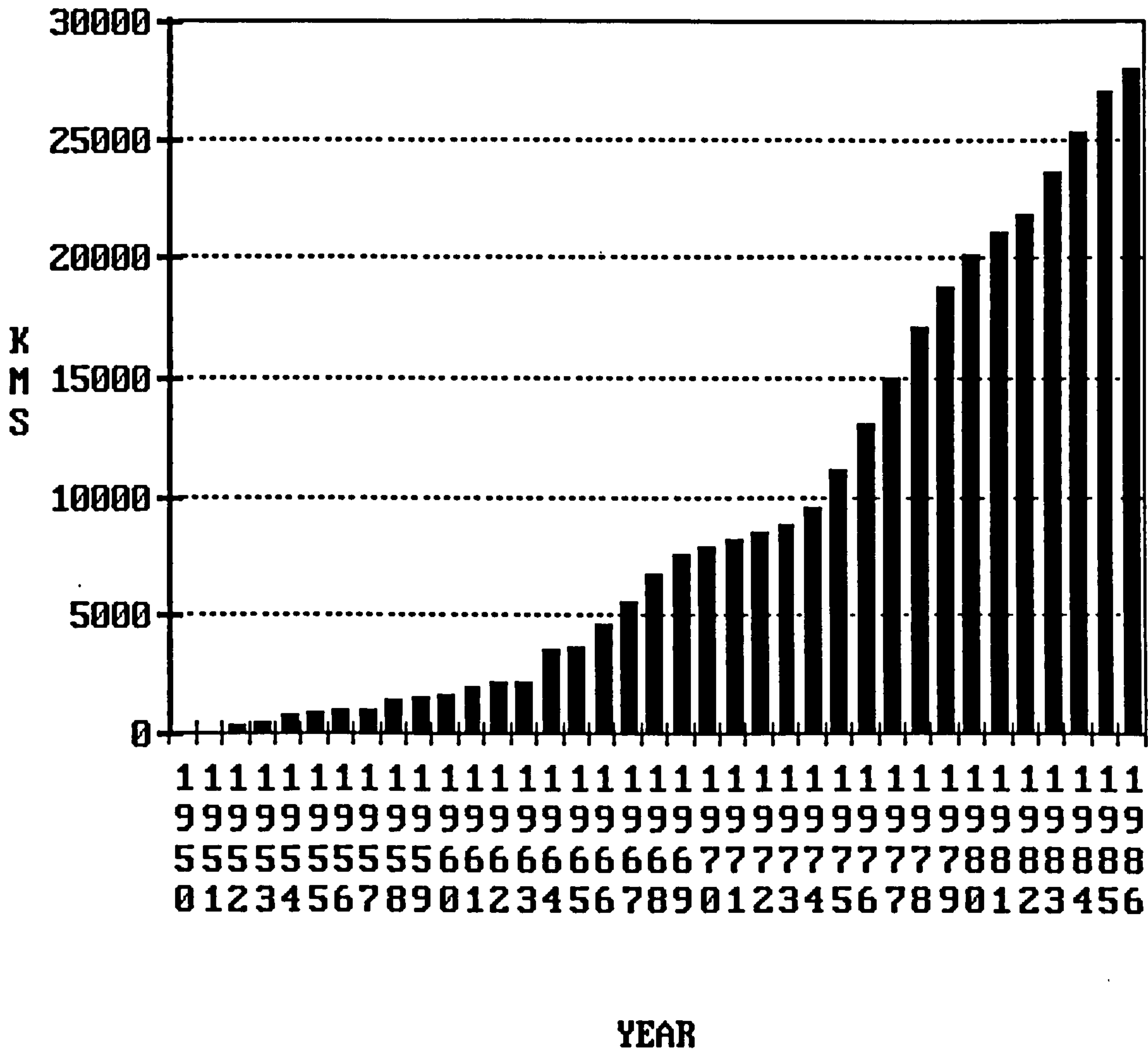
3.3 Motorist Services

Motorist services went through gradual stages of developments until they reached today's situation. This section will try to put some light on the development of motorist services, and therefore will examine services expectations for the early travellers, the gahwah services of the transitional period, and the gahwah services at the beginning of the services development.

3.3.1 Early Motorists and Services Expectations

In the early days of using motor vehicles , although they were more convenient and faster than camel caravans, they had their own difficulties because of the rugged and sandy terrain of many parts of the Kingdom and the lack of adequate roads.

FIGURE 3.4:THE DEVELOPMENT IN ROAD CONSTRUCTION.



الطرق البرية

في المملكة العربية السعودية

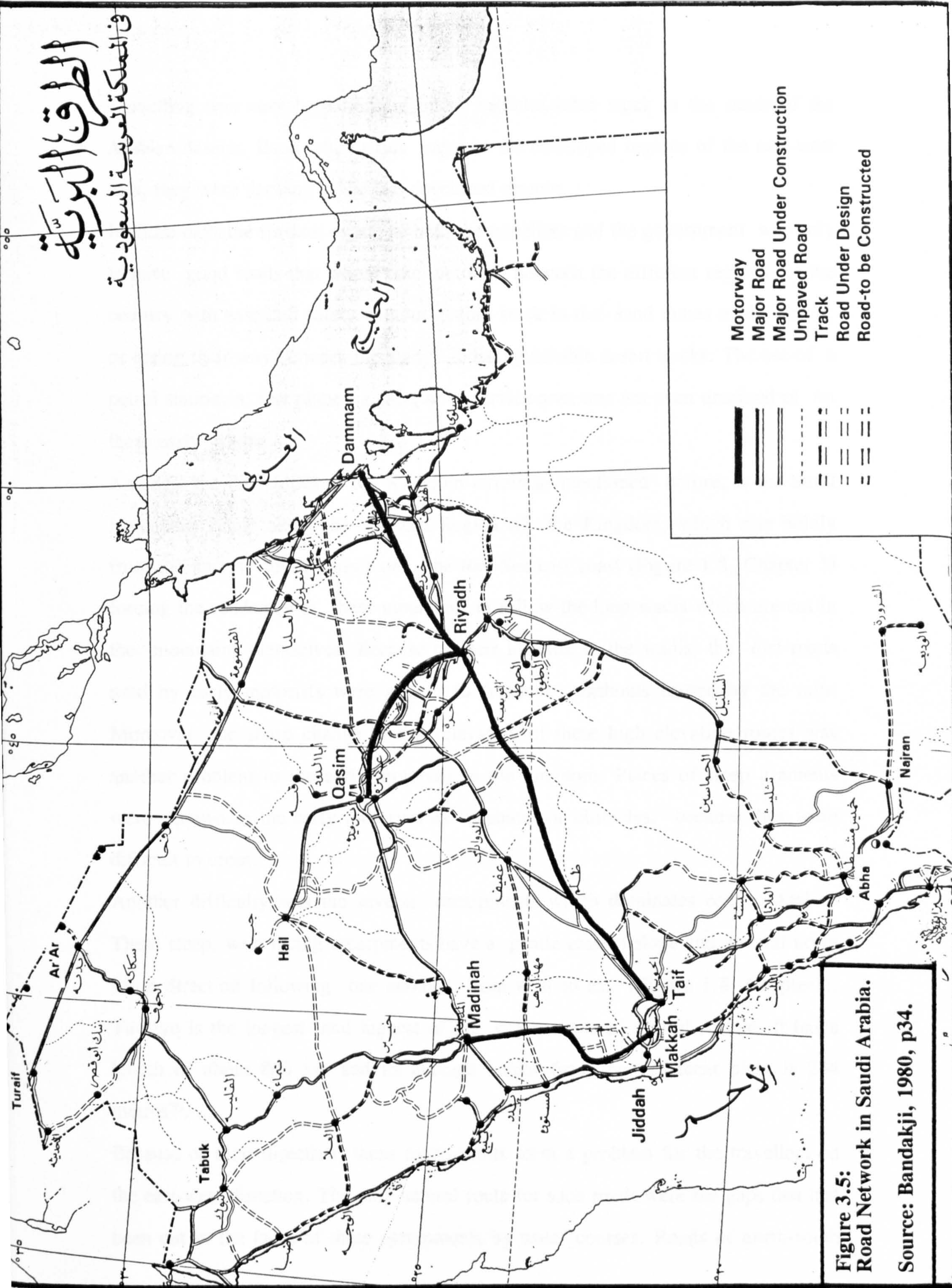


Figure 3.5:
Road Network in Saudi Arabia.

Source: Bandakji, 1980, p34.

Travelling was very hard because motor vehicles often stuck in the sands of the Arabian deserts. Even when roads came to the developed regions of the east-west axis, they were lacking in the less developed regions.

In those days the furthest dream of both the travellers and the government was only to have good roads that would take motorists between the different regions of the country with ease and safety without getting stuck in the sand dunes of the desert, or losing their way between the many indistinguishable desert tracks. The use of a petrol station, a rest place, a cafe, or a service area was not even dreamed of on these early routes.

Amongst the difficulties of the Kingdom terrain as mentioned before, is the Surat Mountains range along the Western Region of the Kingdom, which rise boldly from the narrow coastal plain along the Red Sea east coast (Figure 1.8, Chapter 1) forcing the roads across these mountains to follow the long wadis which are cut in the mountains themselves. Because of their location in the wadis, the dirt roads used by early motorists were subject to frequent washouts caused by the rain. Moreover, the sharp change in the elevation of these high elevation routes was another problem to the early motorists in the kingdom. Places of steep gradients were known to the early motorists as "agabats" or obstacles, because they were difficult to cross.

Another difficulty was the several escarpments which dominates central Arabia. These steep, west facing escarpments have a gentle eastern slope and general north south direction following one another, from west to east (Figure 1.8, Chapter1). Tuwayq is the longest and highest of the escarpments of central Arabia. It has a length of about 805 km and its average height from the adjacent plain is 244 metres²⁰.

Because of their direction, these escarpments form a problem for the travellers on the east-west direction. The only natural route for such roads were the gaps that had been cut in the faces of these escarpments by water courses. Roads of north-south

direction had no choice but to follow the subsequent plains adjacent to the escarpments²¹.

Sand formations is a serious problem in the Kingdom, more so because the country's land surface is covered in many places with several huge sand formations (Figure 1.8). The largest of all is Rub' Al Khali (empty quarter) which occupies 647,220 square kilometres; the second largest is Great Nafud which covers an area of 56,955 square kilometres. Between these two huge sand formations there are several long, narrow belts of sands extending from north to south in central Arabia. Ad-Dahna is the longest of these belts of sand as it extends for 1287 km, linking Great Nafud in the north with Rub' Al Khali in the south. West of Ad-Dahna and in-between the escarpments of central Arabia there are several sand belts coming from Great Nafud to the south but none of them is long enough to reach Rub' Al Khali. Apart from these main sand bodies, sand formations are found in all regions of the country but are much smaller in scale.

Thus the sand formations problem is the most common problem throughout the country. Nevertheless, Rub' Al Khali although the largest sand body in the country does not really form a barrier between any two parts of Saudi Arabia because of its rather isolated location. Moreover, it is the geographical situation of the sand belts of central Arabia which form the more serious problem than either of the two huge sand bodies. By having a general north-south direction these sand belts stand in the way of the most important link in the east-west travel direction: between the oil production area, the political centre and the holy cities. The best examples that shows the transversal effect of the central linear deserts are: Ad-Dahna desert, for motorists travelling from the eastern to the central part of the country; and As'Sir sand dunes between the central and western regions.

In the early days of motor vehicles in the Kingdom, Twitchill examined the possibility of road layouts, and stressed the need for a special treatment for the 80

km section across Ad-Dahna desert and a 113 km stretch between Hinnot and Jubail a total of 193 km (a little more than one third of the total road length, of 523 km, between Riyadh in the centre and Jubail on the Gulf). He also gave the same recommendation for the sand formation of As'Sir on the route from the central to the western region²².

The sand formations in both places were very obvious obstacles to all those who travelled on these two routes, Al-billady wrote about As'Sir sand formation:

"It was a transversal sand formation which caused lots of difficulty to motor vehicles before the creation of asphalt roads..."²³.

Ad-Dahna itself was known as an obstacle to motor vehicles from the first day that car wheels touched its red sands.

Rihani in his book Ibin Sa'oud of Arabia, published in 1928, noted the occasion of the automobile's arrival from Hofuf in the eastern part of the country to Riyadh, the capital, by saying:

"...It came when I was there, the 'trombil'. Two 'trombils', in fact propelled by their own benzine ... but through the sands of Nafud and Dahna they had to appeal to the ship of the desert... eight camels tugged at the two cars, while their engines were also doing their bit, to pull them through; - tugged for an hour at a time and were relieved by eight others. In fact ten cases of benzine, in addition to the energy exerted by the sixteen camels, were consumed in the business."²⁴.

When Twitchell travelled to examine the ancient mines of Mahad Ad Dahab (cradle of gold) in 1932 they had two Ford cars and two Ford trucks, with a total of thirty men. They took gasoline, oil, spare parts and tyres, as well as food, tents, and water, which overloaded their vehicles²⁵.

This is an example of the preparation and amount of supplies needed for travelling in the empty desert, especially when inhabited areas were avoided to shorten the travelling distance.

Because of its haulage capabilities and speed of travel, the automobile freed the travellers from the traditional caravan routes because they were not so dependent on the water sources of these routes as were the traditional camel caravans.

These conditions of the country's terrain made motor vehicle transport very hard in its early days, particularly as motor vehicles were introduced many years before the establishment of appropriate roads. In that period traveller's demands and expectations were limited to better roads, that would take them quickly and safely from one place to another. In these early days, road side services were not expected to be found outside the already established urban settlements. However, with the advancement of time and the influence of travel automation some of the water source' areas falling on the routes between major regions of the country have developed and became urbanized. Al-billady stated that towns like Ad'Dawadmi, Al-bejadiah, Afif, and Zalim on Riyadh-Taif road and Al-Honakiah and Arja on Madinah-Qasim road and Al-Jubob on Taif-Al-Bahah road and many others were originally sources of water and later developed because of the automation influence as they were located adjacent to the roads between the major cities²⁶.

Moreover, where as roads facilitated the development of simple water source locations, new roads may have caused some other towns and villages to be left behind in the process of development, simply by by-passing these existing settlements.

The dirt road from Riyadh region to Makkah was going from Afif to Ad'Dafinah then to Al-Muaih and Ushirah then through Nakhlah Al-Yamaniah and As'Sail Al-kabir to Makkah. But after the introduction of a modern asphalt road, which took another route from Afaif passing through Zalim, all the above mentioned stations of the early road deteriorated. In fact one of the stations, Al-Muaih, has actually followed the new road layout. The town people moved from their old homes to a

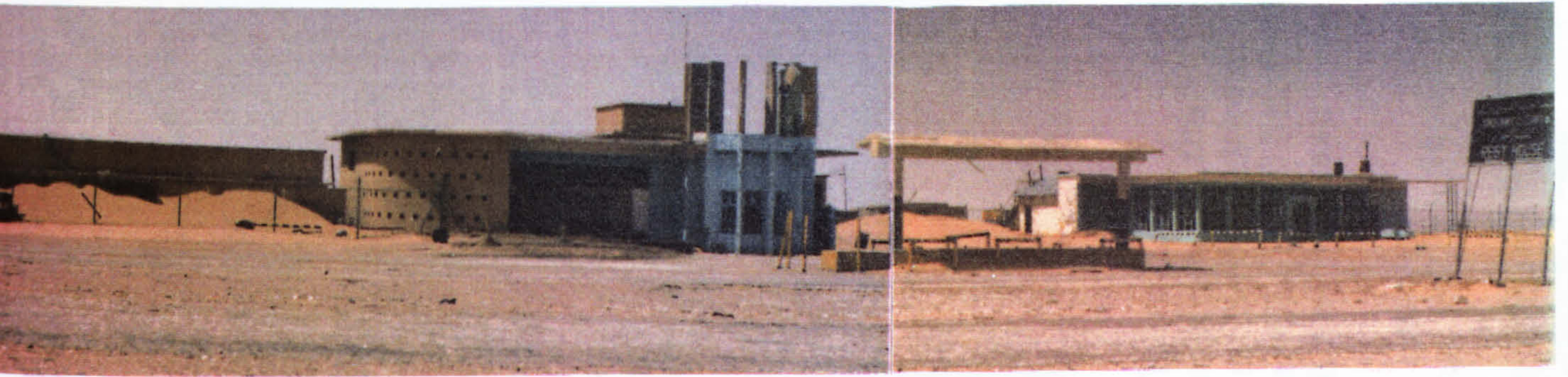
new ones near the new asphalt road and they called this new place 'Al-Muaih Al-Jadeed' or 'Al-Muaih, the new' ²⁷.

3.3.2 Gahwahs in the Transitional Period. (From the 1950's to the early 1980's).

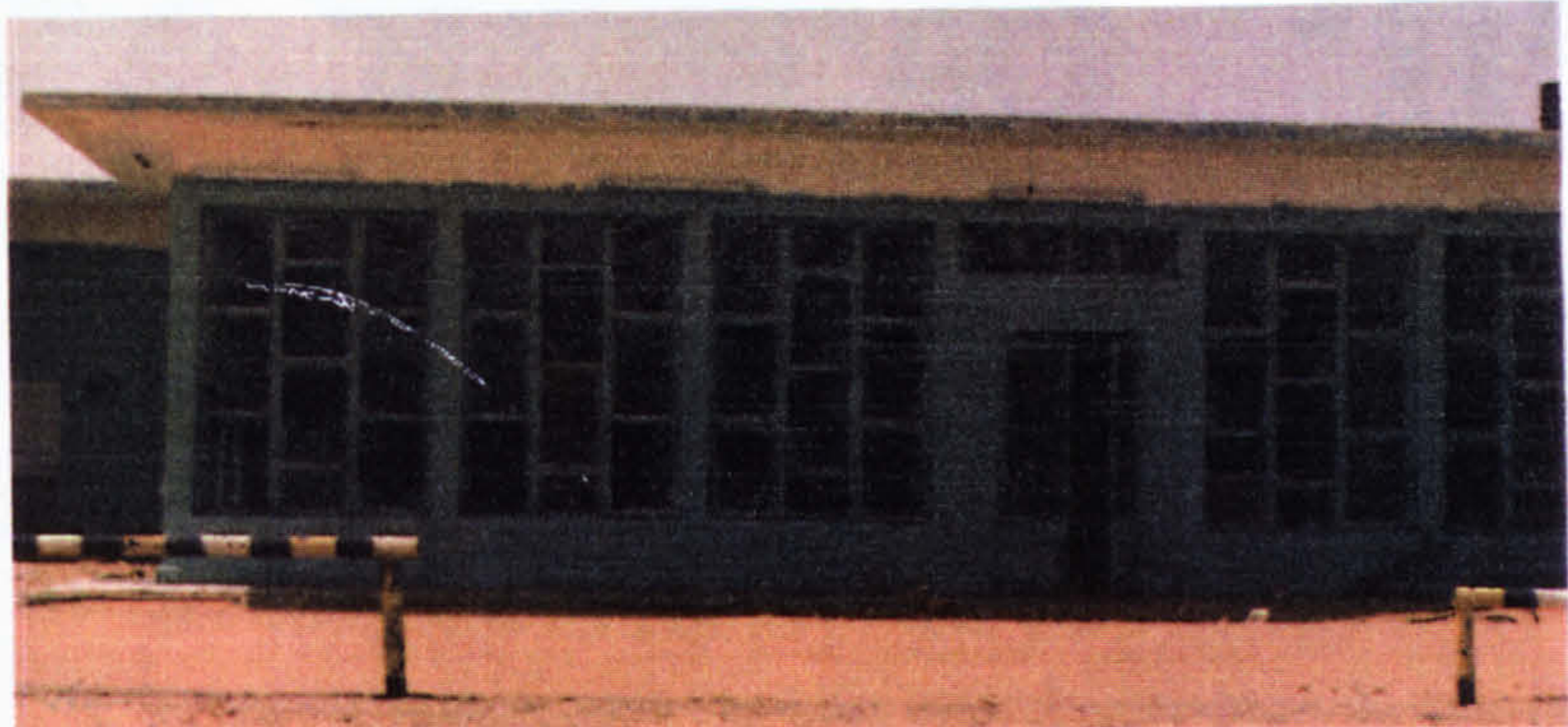
With the gradual introduction of modern roads in the Kingdom, which started in the early 1950's, came the need for services such as food and shelter for the travelling public. In that period of time gahwahs had spread to many parts of the Kingdom near to petrol stations in some cases, or associated with them in others. They were found on the main roads between cities, on city approaches and near to long distance taxi stations inside cities. It was that period which brought many of the Kingdom's famous gahwahs known to the travelling public of that time. Gahwahs like 'Al-Gosaiby's' on Dammam-Riyadh road (Figure 3.6) and 'Al-Subaigawi' on Dammam-Nuairiah road and many others. These gahwahs were like milestones or landmarks of the roads themselves which whenever a road was mentioned these gahwahs came to travellers' minds.

Looking at the east-west axis, for example, in the early 1970's (about twenty years after the development of the first asphalt road in the Kingdom) we find that gahwahs were clustered on the outskirts of Dammam city on the old road which linked Dammam with Hasa and Riyadh. Riyadh city had two concentrations of gahwas one on the old road going east to Dammam and another on the old road leading to Qasim in the north and to Hijaz in the west. The same situation applies to many other cities in the Kingdom including Taif, Makkah, Jiddah, and Madinah (Figure 3.7).

The intermediate towns between major cities have also played a major role in motorists services, where many of them were centres for gahwahs, petrol stations, and automotive services.



a. General View of Al-Gosaiby Gahwah.



b. The Dining Area.



c. Interior of the Dining Area.



d. Petrol Station Building.

Figure 3.6: Al-Gosaiby Gahwah, on Dammam-Riyadh Old Road.

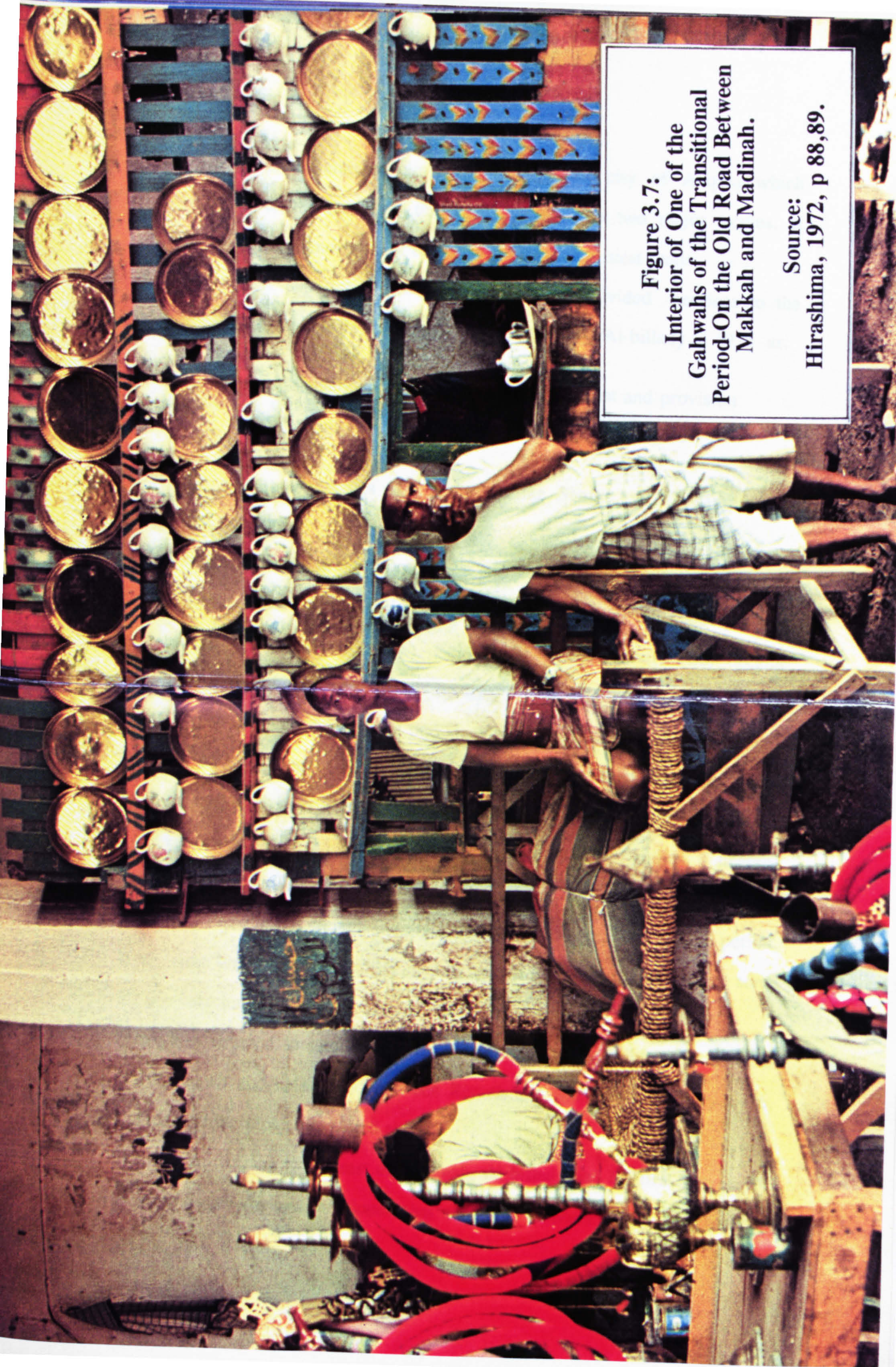


Figure 3.7:
Interior of the
Gahwahs of the Transitional
Period-On the Old Road Between
Makkah and Madinah.

Source:
Hirashima, 1972, p 88,89.

Between Riyadh and Dammam for example, lies the city of Abqaiq which prospered from being directly on this road between the two major cities. It provided services to the motorists of one of the Kingdom busiest roads.

By the same token many towns of Riyadh-Taif road provided services to the travelling motorists; such as Murat which was described by Al-billady in 1976 as:

"a town that has many gahwahs for the travellers rest and provision of food and drinks"²⁸,

in addition to many other cities of this road like Shagra, Ad'Dawadmy, Al-bejadih, Afif and Zalim.

The road between Dammam on the east coast and Turaif on the Jordanian border in the north, follows the Trans Arabian Pipe Line and passes all the major pipeline stations, namely: Nuairiah, Qaisumah, Rafha, Ar'Ar and Turaif. They became urban centres and provided the required services to the road users.

Gahwahs during this long transitional period, which extended from the 1950's until the early 1980's, had many shortcomings (as will be explained in the following section), related to the services provided to motorists. The shortcomings were in areas like management, food quality, facilities for families, sleeping accommodations and toilet provision.

Unfortunately there is not enough literature on the motorist services of this period, however, some writers like Al-billady, a well known literature writer, wrote some limited but very important descriptions of the motorist services of that time.

Al-billady has stressed in one of his travel books, when describing the services between Madinah and Qasim and between Riyadh and Makkah in January 1976, some of the shortcomings mentioned above.

In Al-honakiah, 100 km to the east of Madinah, Al-billady had his first stop in one of the town's gahwahs and mentioned that all of the workers of the gahwah were

Yemenis. He didn't like the available food; so the operators of the gahwah served him tea and bread and brought him canned food from the nearby corner shop²⁹.

After twelve hours of continuous travel the author stopped in another gahwah near Az'zulfi city on the road between Qasim and Riyadh, about 110 km from Qasim.

He said about that:

"I felt very exhausted, therefore I sat in this gahwah where they serve the traditional dish of 'kabsat Ad'dajaj' [boiled rice and chicken] beside the tea and coffee. In this place I performed my sunset' time prayer with a group of travellers and afterwards I laid my blanket on one of the gahwah traditional seats. After I had my dinner and the tea the operator of the gahwah charged me twice the regular price"³⁰.

Al-billady explained that some times they charge customers according to their appearance, and about the management he said:

"all the gahwah workers are Yemenis, who act in a flippant and spontaneous manner"³¹.

Concerning his night in that gahwah, he said:

"it was a very cold night, but I had to sleep in the open outside the gahwah because all the rooms inside were not very clean and were crowded. Therefore I preferred the cold weather of a January night over that situation inside the gahwah."³².

After he left Riyadh and travelling to Makkah, Al-billady was accompanied by a distant relative and his daughter going to Taif. On their approach of the town of Shaqra in the evening, they stopped at a large gahwah where most of the travellers were also stopping. In that gahwah, like the great majority of that time, there were no facilities for families. To overcome this situation, where no privacy was available to the lady, they made some arrangement by taking their seats away from

the area crowded by travellers and workers and using the car as a barrier³³.

Concerning their dinner that night, Al-billady said:

"the dinner here is similar to that of all the stations of the Kingdom roads, it is the traditional 'Kabsah' you have it in lunch as well as in dinner"³⁴.

After having their dinner in the same place (outdoors) , they went in a deep sleep, although it was very cold there in the open as they were tired from being travelling most of that day. Late in the night they couldn't continue because of the cold especially the lady, therefore she went inside the car and had the car heater on. Al-billady carried his sleeping mattress and rushed to the gahwah where he continued his sleep under the roof³⁵.

In Afif, another town on their way to Taif, they stopped early in the morning for breakfast in one of the gahwahs. Fortunately this time there was a nearby room available for travellers accompanied by families, the lady stayed in that room in privacy and the two men stayed on a nearby seat. After having what Al-billady described as an "unpleasant breakfast", they continued their trip towards Taif³⁶.

Their last stop was on 131 km from Taif in a place called Radwan, because they felt tired from travelling all day long. They stopped by one of the gahwahs and asked the operator if there was a private place for the lady to stay in, but the answer was negative, so they made an arrangement using the car and the nearest wall to create a private place for the lady to sit in³⁷.

In his other travel book (1982) in the southern parts of the Kingdom, Al-billady described his experience in one of the road gahwahs between Bahah and Abha. That was in Adamah, 145 km to the south of Bahah. Al-billady arrived there at noon time and stayed in a gahwah which he described as "not clean". There he was

served with unpleasant tea, and when he asked the operator for traditional Arabian coffee, he answered him: "none of the road gahwahs serve Arabian coffee !" ³⁸.

In contrast to the roadside services in general and to the food quality of his earlier stop in Adamah in particular, Al-billady described the food that he had in one of the restaurants of the city of Khamis Mushait as "delicious and harmonious with the restaurants' good appearance". About the restaurant itself he said:

"its velvety furniture reminded me of the luxurious restaurants of Damascus on Barada riverside ³⁹.

In that same trip he entered a restaurant in the city of Najran, where all the workers were Yemenies, and he described the restaurant as "clean and has modern interior design" ⁴⁰.

This positive impression Al-billady formed lay in contrast to the negative impression formed from his use of the road gahwahs (as described above), despite the fact that both were managed by staff of same background and nationality.

The quality of facilities and services in the last two examples, which are of course urban areas, were perceived totally different by the author. This undoubtedly related to the different standards for catering services between those on roadside in remote areas and those in cities and similar urban settings. In the latter, more choices were available which were further enhanced by the trade competition and influenced by local authorities' strong controls.

That also demonstrated the existence of many shortcomings in the operation of gahwahs during the transitional period. These shortcomings are related to food quality compared to urban areas, in addition to the management practices and the lack of facilities for families, sleeping accommodations, and toilets.

3.3.3 Gahwahs and the Motorways Era

The public attitude towards the gahwahs' shortcomings reached its climax in the early 1980's as the country was witnessing the achievements of the major social and economical development which has been reflected in many aspects of every day life in the Kingdom. The development in road construction, for example, brought a new dimension in this period by the introduction of the first motorways. The whole development in general and road development in particular increased motorists expectations beyond what the traditional gahwahs could offer.

The emergence of the new motorways pushed some writers to discuss the matter of the available gahwahs on the existing non-motorway network in order to find some answers applicable to the motorways under construction.

In Al-Yamamah (1985), one of the leading weekly magazines in Saudi Arabia, came an article titled "Roads Like Roses and Services Like Thorns". This article came as a reflection of the growing public demand for the upgrading of motorists services.

In his introduction, the writer described the Kingdom' roads network as modern and stretched, but the development in motorists services was not proportionate to that of the network. He stated that:

"the existing services in many sections of the roads network are old and not functioning as they are supposed to and not compatible with the roads themselves"⁴¹,

Therefore the author asked for the provision of complete service areas that combined all the services needed by the travellers or by their vehicles⁴¹.

The author described the motorists services available on the existing roads as :

"ordinary gahwahs or less than ordinary in some places, their services are limited to the boiled rice meals with chicken or imported fish ! in addition to tea and water pipes for those who are interested. However the prices are high, where a lunch for an average size family may cost as much as 200 S.R."⁴².

In the same article, Mr.Ja'far Thabit, the assistant general director of the Islamic League described the available services by saying:

"they are not conformative with our status as a civilized society believing in a religion which incite for organization and discipline"⁴³.

He also added:

"if the existing services remained, they will be a source of query from all their users whether visitors or Saudi citizens"⁴³.

Mr.Thabit urged the authorities to take a further step and approach the gahwahs operators, stressing the importance of the improvement and organisation of their services in a way that satisfies the travelling public⁴⁴.

One of the gahwahs owners interviewed, admitted the real need for improvement and gave two reasons for the backwardness of services. The first one is the uncooperative attitude from the local municipalities who refuse all operators suggestions for development and only care for regulating the prices by preventing them from going up. The second reason is the operators themselves as many of them lack the experience and the awareness of the importance of these services and the importance of their organization and their appearance⁴⁵.

Another gahwah operator said that the operators are not the only group responsible for the backwardness of the services. Because as soon as they try to make any development in their services they face many difficulties from the local municipal

authorities. This particular operator stated that he tried to make some arrangements in his gahwah, such as providing some plantation and proper dining facilities for families, but he was stopped by an official order from the municipality of Rabig city, who accused him of enlarging his gahwah by taking more of the governmental land. He also said:

"if the municipality cooperated with me, I would have built a comprehensive service area like those found in developed countries"⁴⁶.

Of course all these shortcomings mentioned above are related to the gahwahs on non motorway roads, which were of course clear to some of the governmental circles related to motorists' services development.

The Ministry of Transport officials for example were aware of these shortcomings of the gahwahs of the transitional period, at least during the construction stages of the new motorways. Therefore, as soon as the first motorways were opened for the public, the Ministry of Transport was involved in implementing new ordinance for the motorway services. The reason for the new ordinance seems to be for ensuring the availability of a minimum set of services in every single service area, in addition to avoiding some of the shortcomings of the existing gahwahs on non motorway roads.

In that context engineer Abduh Zailai, the head of the development section in the Directorate of Roads in the Western Region stated that:

"The ministry of transport has specific ordinance for developers interested in establishing motorist services. The new ordinance requires the service area to be centred around fuel dispensing station and contains a small cafe for hot and cold drinks, toilets supplied with running water, and a place for oil and tyre services "⁴⁷.

Mr.Zailai also added:

" The same ordinances requires the developer to construct enter and exit roads for his station, and the chosen location for development should at least be 2 km away from the nearest intersection, overpass,large structure, or sharp curve"⁴⁸.

Dr. Ahmed Kutub, the general director of Transport Directorate in Jiddah advocated the Ministry of Transport approach by saying:

"The Ministry requirements are going to be much more appropriate than the existing situation, and it will ensure the total safety and protection to the travellers by providing all the required services in a single place"⁴⁹.

Here it should be explained that, the Ministry of Transport concept of ensuring the availability of a group of services in a single stop is very much appreciated, especially if the entry and exit roads were to follow traffic safety standards. However, the Ministry concept of stressing the importance of petrol stations to the degree that it becomes the core of motorway service areas is far from being adequate. Putting more emphasis on the petrol station and the oil and tyre services, leads to the danger of giving more weight to the motor vehicles instead of the motorists themselves, especially as the Ministry's requirements for the motorist asks only for a cafe that provides hot and cold drinks.

Food services like those provided in the gahwahs of the early and transitional periods are needed on any motorway and should be provided to the general public. However, the negative aspects of the transitional gahwahs in the areas of building quality, food quality, or unavailable facilities should be solved by better coordination between the Ministry of Transport and the development control section in the municipalities and other governmental bodies involved in the development of motorway services.

The gahwah concept is alright if it has all the facilities and the quality of services that will satisfy the motorists needs. The deputy mayor of Jiddah is one of those officials who are so enthusiastic to see the gahwahs developing into modern service areas that has all the facilities. However he is keen to see that improvement go hand in hand with the preservation and upkeep of the traditional character and identity of the early gahwahs.

Of course, the period that has followed the opening of the new motorways witnessed the creation of many motorists services on the motorways' sides with varying degrees of the provision of facilities and with varying degrees of quality of services. The following chapter will try to explain the different controlling authorities and their roles in the development of motorway service areas in addition to the nature and quality of the facilities provided in these service areas.

3.4 Summary

The use of motor-vehicles in the Kingdom had many difficulties in its early days. Most of difficulties were related to the country's terrain and the unavailability of modern roads. At that stage, travellers' expectations of services was limited to the provision of proper roads. After the introduction of roads, towns and settlements on these roads became the place for travellers' services where they could find petrol stations to refuel their vehicles and gahwahs to rest and eat in. In addition some non urban gahwahs and petrol stations also provided similar services to travellers and their vehicles. Most of the motorist services in this transitional period (1950s-early 1980's) had many shortcomings related to management practices, food quality, and the lack of family facilities, proper sleeping accommodation, and toilets.

With the introduction of the new motorways in the early 1980's, came the need for more organized services parallel to the general development witnessed by the

country at that period. The evidence from the Ministry of Transport in that period during the introduction of motorways suggests that there was some awareness of the transitional gahwahs' shortcomings. However there were no clear objectives laid down by the governmental agencies involved, towards the development of satisfactory travellers' services.

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CHAPTER FOUR

CHAPTER FOUR

OTHER COUNTRIES EXPERIENCE IN MOTORIST SERVICES

4.1 The American Motorist Services.

4.2 The British Motorist Services.

4.3 Comparison Between the British and American
Motorway Services.

4.3.1 Criticism of the American System.

4.3.2 Criticism of the British System.

4.4 Conclusion.

CHAPTER FOUR

OTHER COUNTRIES EXPERIENCE IN MOTORIST SERVICES

In this chapter both the American and British concepts of provision will be examined, as they provide a valuable experience in the field of motorway service areas, especially with the contrasting provision concepts between the two countries.

4.1 The American Motorist Services

The development of motorists services in the United States goes back to the 1920's and 1930's. The National Park Service is believed to be the first to suggest the development of these services calling them "waysides" (Figure 4.1). The reason for their development was the same reason for creating today's rest areas in the U.S., namely to provide safety and service to motorists¹.

These early waysides provided off-road parking, and basic services, such as picnic tables and litter bins. Sometimes they included water and sanitary facilities².

The Federal Aid Highway Act of 1938 was the first piece of legislation to aid the development of the U.S. service areas. This act stated that states may develop sanitary and other facilities using federal funds³.

The following Federal Aid Highway Acts, including the Highway Trust Fund and the Highway Beautification Act of 1965, improved rest areas through funding and stimulus of rest area programs⁴.

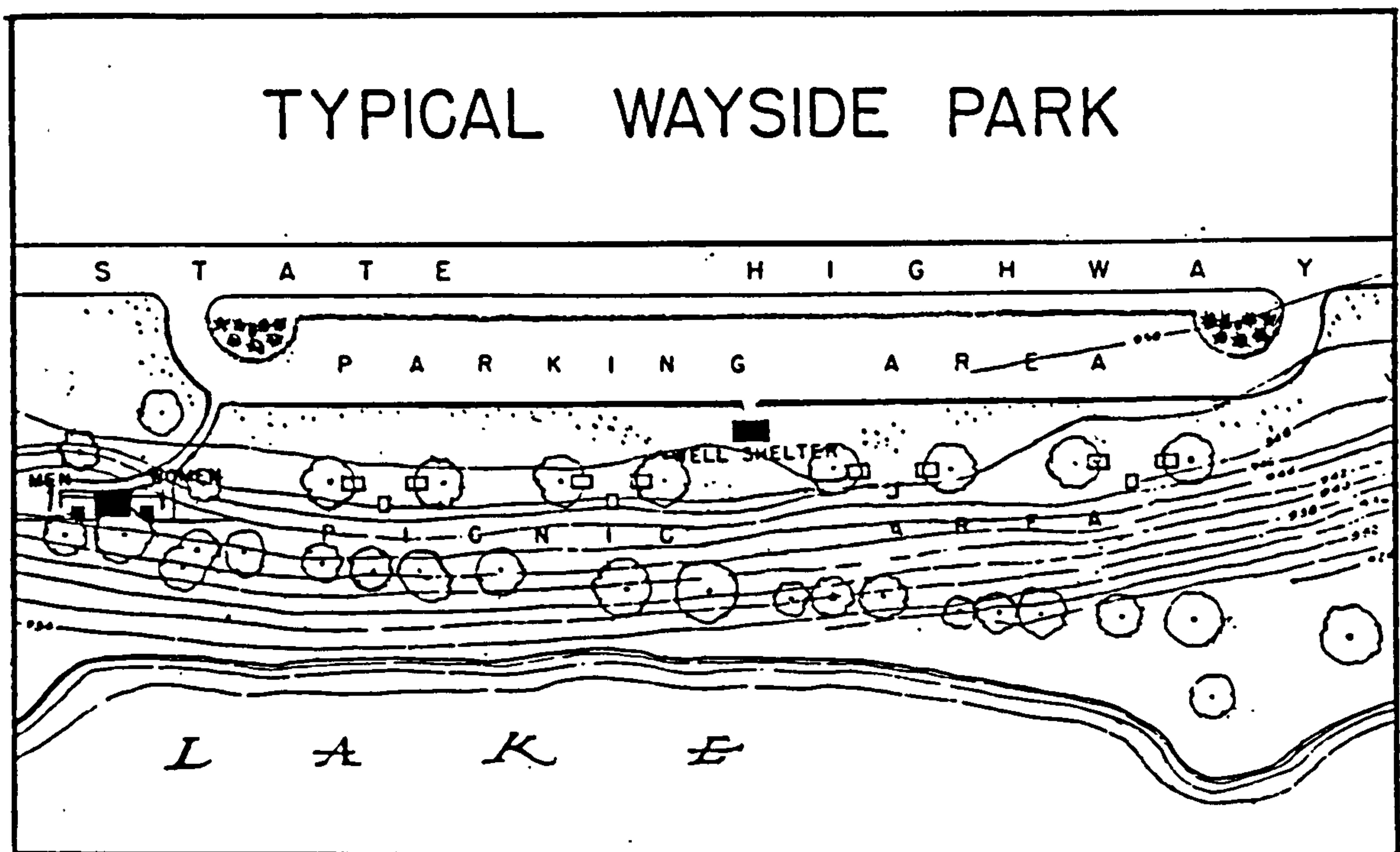


Figure 4.1:
Plan of a Typical American Wayside (Early Rest Area).

Source: Gordon, 1952, p 22.

The latest U.S. service areas (Figures 4.2,4.3) provide a wide range of facilities compared to those of the early days. They include parking, restrooms, lavatories, hand dryers, drinking water, picnic tables, shelters, fireplaces, and public phones⁵.

During the development of the American rest areas, some studies were conducted to assess their performance and usage. One of the earliest but yet important ones is that which took place in 1960, and involved seven rest areas on sections of the US 99 and US 30. Among the main findings of this study were firstly, the number of rest area users increases with the controlled access sections of the roads. Secondly usage also increases with the remoteness of the rest areas from other locations providing the same service. Thirdly rest rooms, drinking water, and picnic tables were highly used services by motorists.

The study has also indicated the importance of proper road signing and recommended a minimum of daily maintenance⁶.

In the 1968 National Rest Area Usage Study, data were collected from a nationwide sample covering 113 rest areas. Among the findings of this study was that the accessibility of nearby facilities (such as petrol stations and dining facilities) and the facilities provided in the service areas were the two major factors affecting the number of stops in the rest areas.

Comfort facilities were found to be very important to increase the number of users and they were also found to be highly used.

The study also indicated that if many commercial services providing petrol and food were available distances between rest areas should be increased, and if only few commercial services were available distances should be shortened⁷.

Another study (1969) gathered data from a nationwide sample. In this study responding travellers identified confusing or inadequate signs among the prime annoyances. Traffic and unclean restrooms were moderate sources of annoyance.

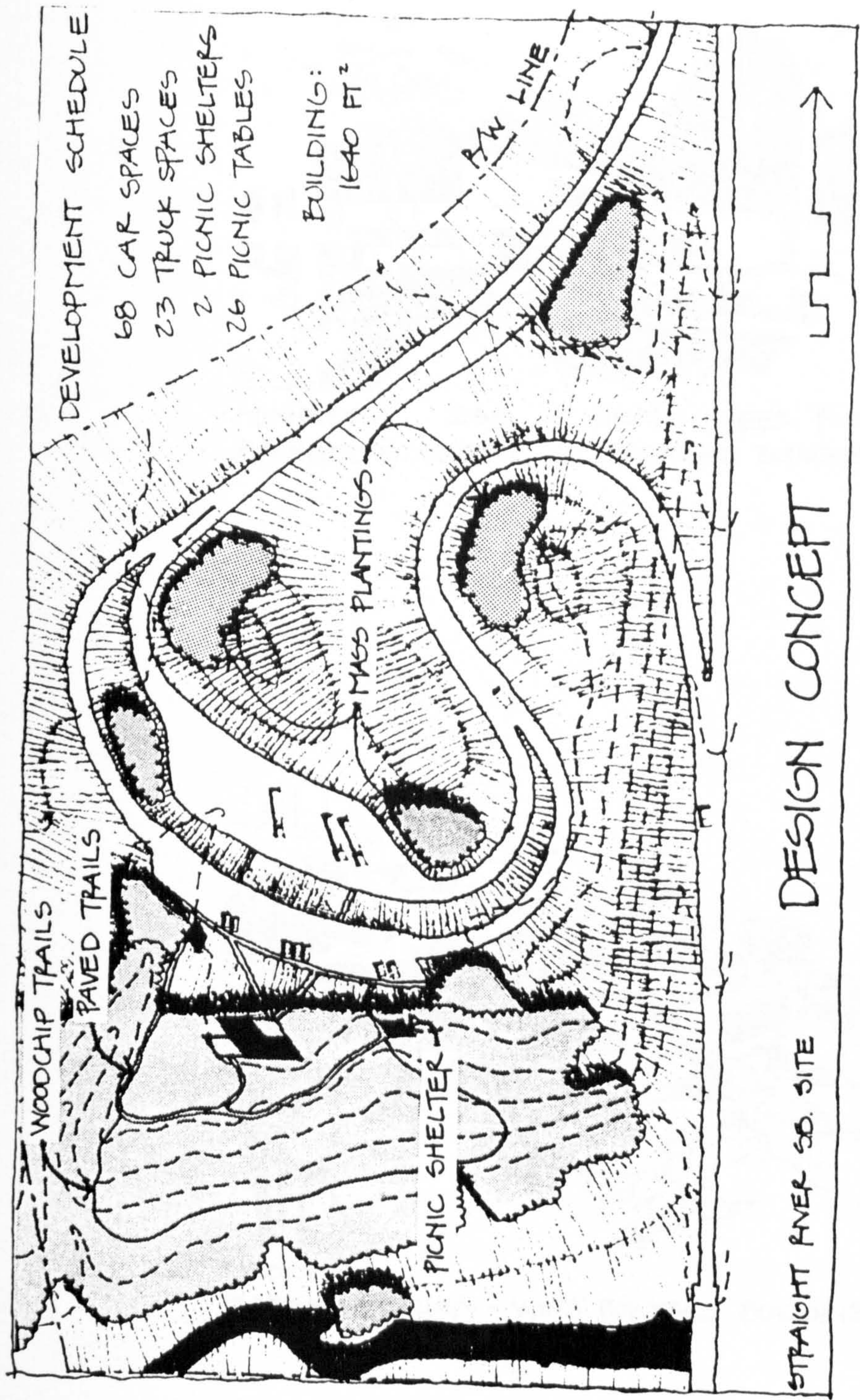
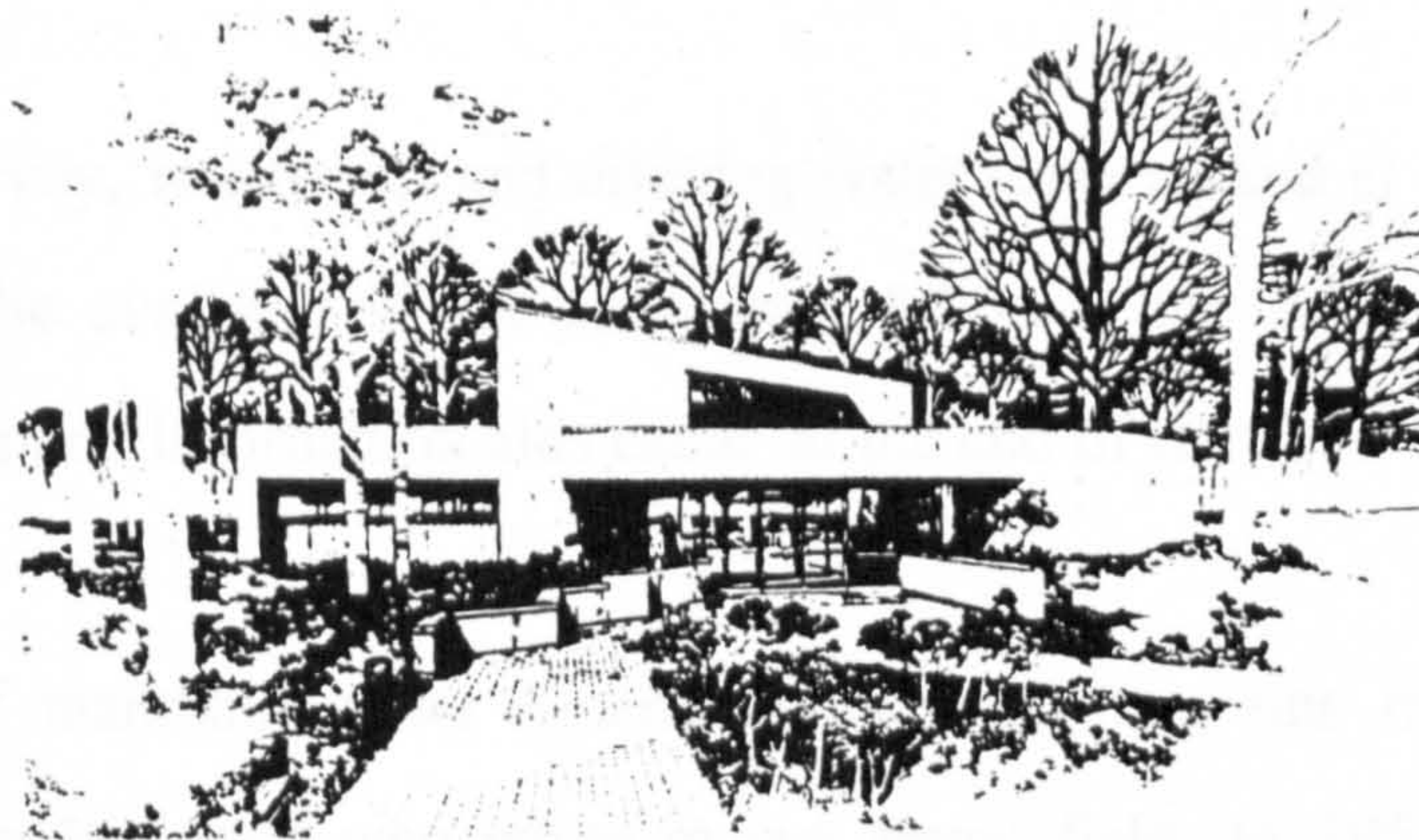


Figure 4.2:
Design Concept of a New American Rest Area.
Source: Rierison and Adams, 1981, p 40.



MINNESOTA I-35 HEATH CREEK F.A.
ARCHITECT'S SKETCH OF PROPOSED BUILDING



MICHIGAN
PROPOSED SOLAR - WIND POWERED BUILDING

Figure 4.3:
Architects' Sketches of Proposed Rest Area Buildings.

Source: Rierson and Adams, 1981, p 60.

Opinions differed on the amount of annoyance caused by the lack of services. Some travellers indicated no annoyance at all, others ranked it as the prime source of annoyance.

In the same survey, rest rooms and drinking water were ranked at the top of the list of priority to be available in the rest areas, followed by telephones and picnic tables. Lighting and information aids came at the end of the list⁸.

The subject of maintaining the American rest areas was one of concern to the officials and professionals who wrote in rest areas' field. In 1953, Gordon in his article "Parking Turnouts and Rest Areas", suggested some construction details to minimize maintenance and prevent vandalism such as making toilet windows above the average reach, providing wire-reinforced glass, using rough interior wall finishes⁹.

Eckert, in his article "A concept for Interstate System Rest Areas", has put a strong emphasis on a high standard of maintenance, and made it mandatory. He stated that:

"Neglect begets neglect and mis-use on the part of the public, with the final result being excessive vandalism and loss of respect"¹⁰.

Among the strong reasons behind vandalism could possibly be related to the nature of the system which lacks a 24 hour attendance in the individual rest area sites.

Garmhausen indicated the importance of a caretaker's presence in rest areas, as a "key person" in roadside rest programs, whose position is an important one for the reputation of the rest areas, where he will do routine duties such as emptying litter bins, keeping the toilets clean, and keeping insects under control¹¹.

4.2 The British Motorist Services

The first service area in Britain was opened at Newport Pagnell on the M1 in 1960. After ten years there were 17 additional services operating in Britain. The statistics of 1978 showed that a total of 40 service areas were operating in Britain¹² (Figures 4.4,4.5).

The development procedure for developing a service area starts with Department of Transport, which employs private consultants for suggesting the best possible locations. The Department then chooses the most appropriate site in consultation with the local planning authorities¹³.

At a following stage, operators are invited and their schemes are judged on a combination of artistic merit and cash return¹⁴. The Department of Transport finances the acquisition of land, and provide the access roads. The final layout is prepared by the tenderer which includes landscaping, parking areas, lighting and basic services. The operator is required to pay for the building and equipment, maintain the facilities, and provide 24- hour service¹⁵.

Eight years after the introduction of the motorway service areas in Britain, Nutt wrote an article titled "Motorway Service Areas". In this article he explained that there is a relation between the capacity of a service area and: the density of motorway traffic, the distance from urban areas, the type of route, and the number, size, and location of other services on the same route¹⁶.

He also emphasized the shortcomings of designing rest areas exclusively to the present demand because many trends can change easily during the course of the 50 years lease period, such as the travelling behaviour, eating habits, social customs and catering methods.

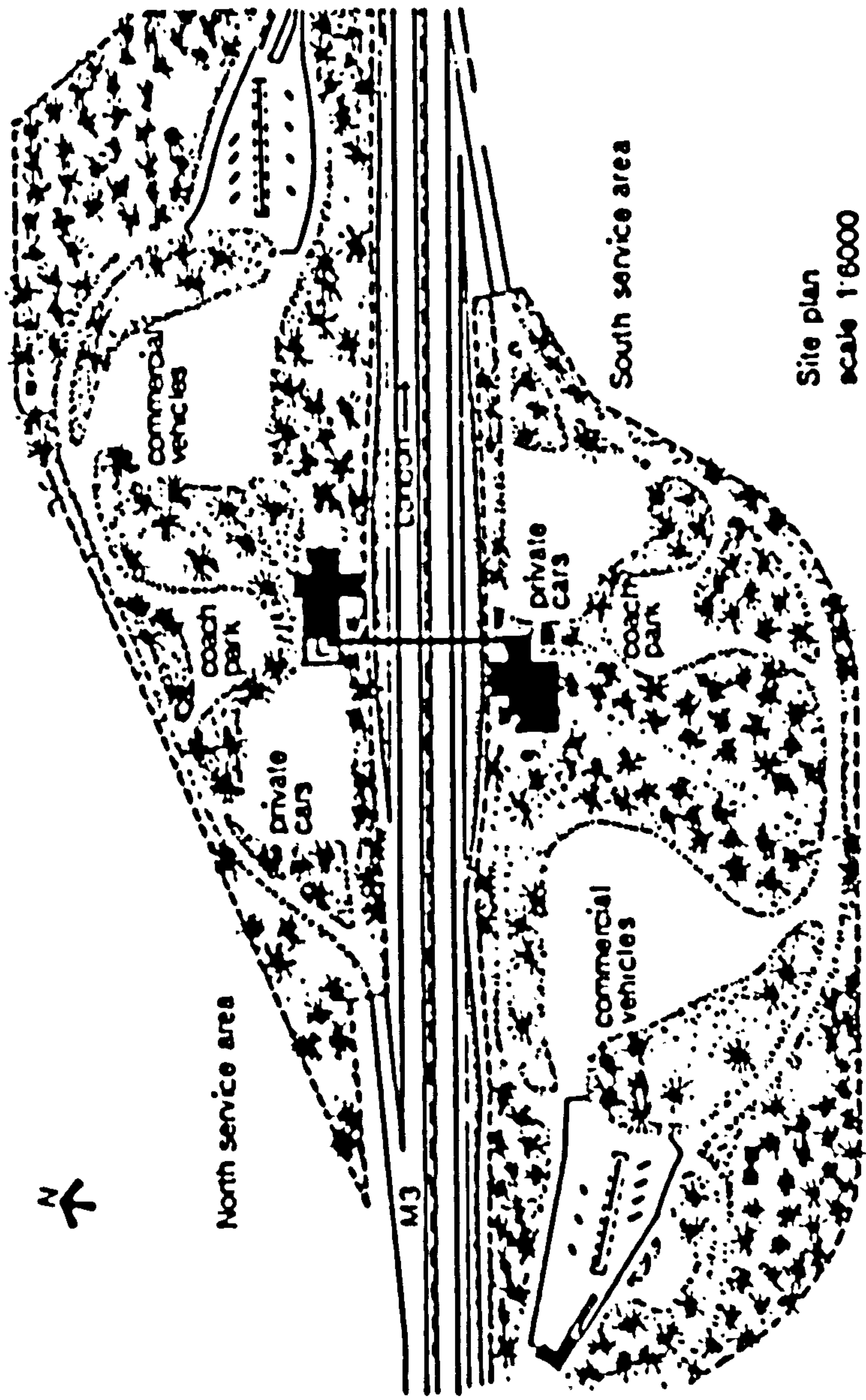
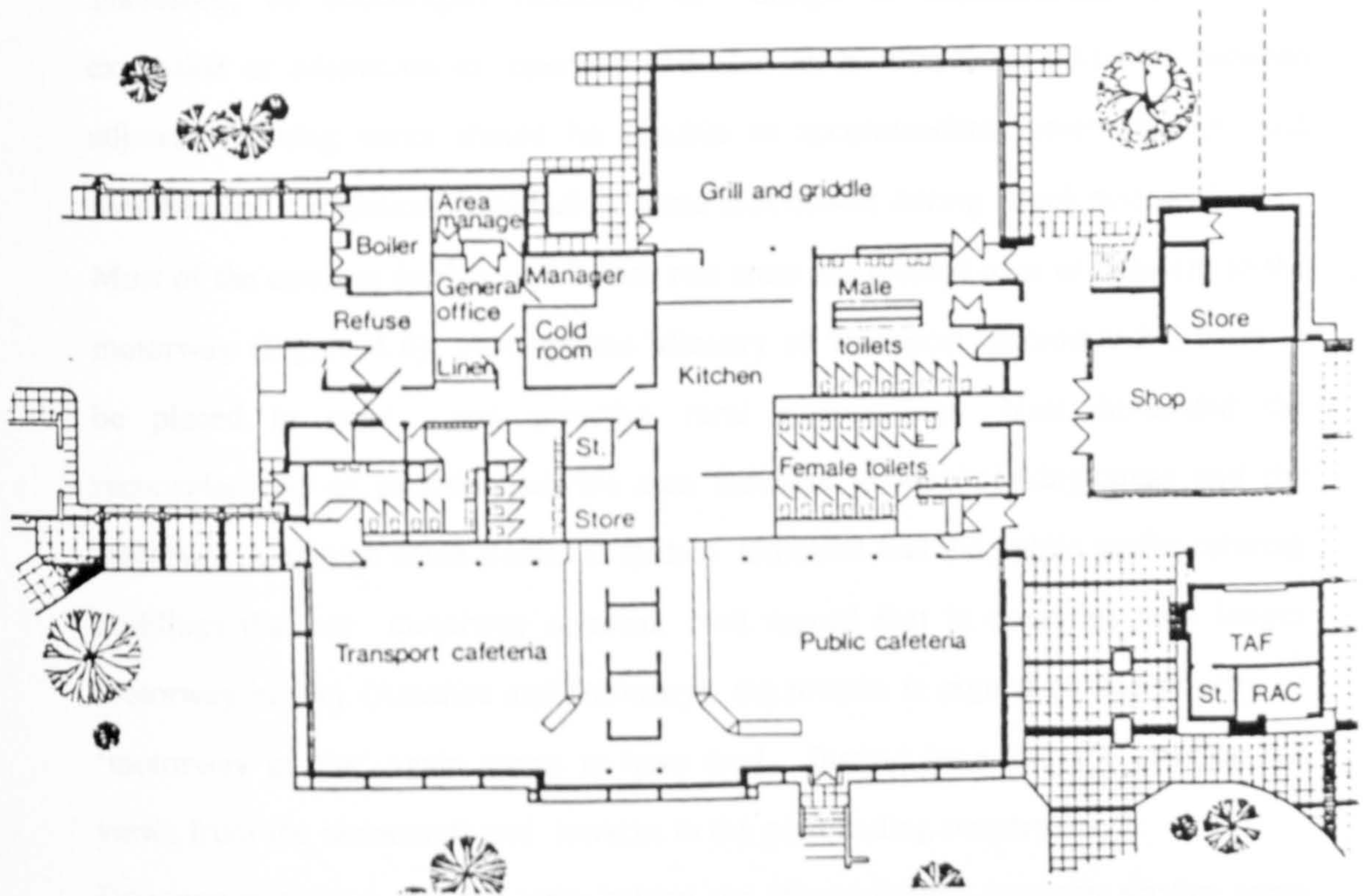


Figure 4.4:
Site Plan of a British Double-Sided Service Area. M3 Service Area at Fleet;
Opened in 1973.

Source: Williams, 1975, p 65.



West elevation



South elevation part section

Figure 4.5:
Plan and Elevations For M3 Service Area at Fleet, England.

Source: Williams, 1975, p 66.

Therefore, he encouraged flexibility in design to accommodate any future expansion or adaptation in operator and user needs. Structural divisions between adjacent dining areas should be flexible to accommodate future change, and facilities and circulation should allow some shut-downs during slack periods¹⁷.

Most of the catering facilities of British rest areas are located over or adjacent to the motorway (Figure 4.6), although the Ministry of Transport recommended them to be placed in quiet and attractive rural surroundings. Nutt demanded the reconsideration of exposing service area facilities to the parking areas and the motorway, although some studies in Britain indicated that the public prefer catering buildings that are motorway oriented. Nutt argued that in countries with longer motorway history (America and Germany), the reverse is argued as the novelty of 'motorway gazing' again seems to have died. Instead he asked for opening the views from the restaurants and terraces to the surrounding countryside¹⁸.

Downing explained that the logic behind the intervisibility between service areas and motorways is a commercial one, and described the construction of restaurants on bridges over the motorway as "one of its most bizarre results" offering "...an uninterrupted view of the traffic speeding towards and away from the site"¹⁹.

Among other important measures for the development in design, was his encouragement in changing that approach, especially with the success indications of positioning service areas as part of motorway signing, which he described as appearing to provide "perfectly adequate advertisement"²⁰.

The grouping of buildings and restaurants around the motorways was not the only product of the commercial approach in the service areas. Its major product was the emphasis on internal facilities, and the minimizing of the role of non-commercial facilities which caused the earlier service areas to become:

"...essentially buildings providing the necessary internal services, with their attendants car parks, separated more or less well from the surrounding landscape by some form of screen planting"²¹.

Dean and Swann, in their article "Parking for the Motorway People" (1973), took the argument further by proposing a new form of motorway service facility combined with a countryside park, directly accessible from the motorway, providing services for both short and long stops. They criticised the situation of service as being

"... an isolated and designed area of service facilities, far removed from the countryside and its amenities, and with no direct access to the countryside."



Figure 4.6:
Most of the Catering Facilities of British Service Areas Are Located Over or Adjacent to the Motorway.

Dean and Stanton, in their article "Parkland for the Motorway People" (1973), took the matter further by proposing a new form of motorway service facility combined with a countryside park directly accessible from the motorway, providing services for both short and long stops. They criticised the situation of services as being:

"... conceived and designed more as refuelling points for vehicles and humans beings- intended primarily to keep vehicles moving"²².

They also criticised services as not being part of the area where they existed.

In another article (1974), Nutt proposed some measures to improve new service areas and to update the existing ones. Among these measures were the diversification of the services offered and the provision of additional ones. Services offered on each route should be different and fits the route characteristics²³.

He wanted infill developments to supplement existing services on all routes and recreation facilities on rural routes. These infill developments, as Nutt argued, should include picnic areas, restaurants, short stop facilities, and information centres. Nutt also recommended the German, Italian and American concepts of providing parking areas with toilets in short intervals for motorist relaxation. In addition, to carry out some of the tasks mentioned above, Nutt recommended the formation of a new publicly owned company to finance and build a group of small motorway restaurants and lease them to individual operators on a 5 year basis²⁴.

Downing encouraged the consideration of providing alternative types of facilities similar to those proposed in the Prior report, and explained further that if an equitable basis for operating a different kind of services can be established:

"there is every reason to introduce intermediate service areas which might have much more limited facilities and concentrate on rest and recreation"²⁵.

In addition to the provision of the new services mentioned above, Downing demanded:

"...a new program of development of service areas, complementary to the commercial provisions undertaken by the operators, involving the expansion of sites and full comprehensive landscaping of the extended areas... [which should be taken]...in parallel with the refurbishment and repair of the motorways themselves, as a government responsibility..."²⁶,

and paid for from the funds of the basic motorway management.

4.3 Comparison Between the British and American Motorway Services.

Both the British and American systems of motorists services are of great importance because each represent a conventional approach of serving motorists. The two systems are concerned for improving road safety and minimizing tiredness of drivers and enhancing the comfort and convenience of travellers.

The major difference between the two is that the American system is based on the concept of keeping all commercial facilities off the highway in accordance with the 1956 legislation which prohibited the establishment of commercial facilities on the highway right-of-way²⁷. In effect that meant services like dining facilities, fuel, and other vehicle services are not available in the rest areas, and therefore they only can be obtained from commercial operators outside the motorways right-of-way.

In contrast, the British system has commercialized the motorway services from the beginning. The justification given to that approach by the Department of Transport was related to safety and environmental benefits. Statistics showed that motorways have less percentage of accidents compared to other roads. So it was advantageous to keep the motorway traffic on the motorway and away from towns and secondary roads. In addition, motorways were considered by the Department of Transport to have an environmental role because they direct traffic in one stream away from towns and residential areas. Therefore, the provision of food, fuel and rest facilities

on the motorway is believed to be very important in keeping motorists on the motorway and away from urban areas²⁸.

Hearn explained that the differences between the American and British systems are due to different circumstances. In the U.S., motorists are usually on long journeys, while motorists in Britain are usually on shorter trips of about 100 miles²⁹. In fact, there is more concentration of traffic in Britain when compared to the U.S. because of the difference in size, (interstate highways in the U.S stretch for long distances through rural areas characterized by low traffic density). These different circumstances should have an inevitable effect on the decision which shaped the two contrasting systems.

On the other hand the ability to subsidise and maintain the motorist services, was an area of further difference between the two systems. The American system had total governmental involvement both in the area of provision and maintaining the services. The British system, according to the Department of Transport's evidence, although providing facilities under the criterion of enhancing comfort and convenience of travellers, was linked to public demand that yielded a satisfactory financial return³⁰.

The result of the above mentioned policies were two contrasting concepts of provisions in the two countries. The American system itself provides two separate systems (1) governmental, which provides the basic rest and relaxation services at standard intervals; and (2) a commercial system which deals with other travellers' needs and vehicle services, and operates on the fringes of the motorway intersections outside the right-of-way, wherever there is a commercial potential. The British system combines the two concepts of rest and relaxation with a wider range of services that has no parallel in the American rest areas.

4.3.1 Criticism of the American System

The contrasting differences between the two systems formed the centre of each system shortcomings and deficiencies in services provided. One of the shortcomings of the American system, is that related to the unavailability of petrol stations within the service areas. Kuprijanow et al. explained in their article 'Motorists Needs and Services on Interstate Highways' that Running out of petrol is a potential problem on the Interstate highways, where the average daily traffic is low and the nearest petrol station is closed at night. They even suggested the provision of self-service gasoline pumps to solve the problem. Insufficient signing is another problem raised by the same writers, and they suggested allowing advertising relating to motorists services until a better means of leading the motorists are developed³¹. The signing problem is a feature of the American system because, near intersections it is very difficult to give detailed information to motorists about the services clustering just off the highway and a simple sign that says 'food and fuel' is not always found to be satisfactory to the public or to the operators.

In addition, Poorman and Chamberlin-two leading officials in Pennsylvania Department of Highways- argued that:

"In spite of the availability of safety rest areas facilities, the lack of service stations, food and lodging accommodation, and even recreational areas, is being questioned"³².

To remedy the situation they proposed some modifications in the provision policies, including the use of dispensers of food, coffee, etc., and perhaps gasoline on an emergency higher-price basis so that it would not be competitive. The writers stated that the provision of food and coffee will provide the incentive to motorists in general and truckers in particular to stop for rest. They also confirmed that:

"A modification in existing policy to permit sales, as outlined above, would help to defray the cost of full-time attendance"³²,

Which is increasingly becoming necessary.³²

4.3.2 Criticism of the British System.

On the British side, some criticism was directed to the Department of Transport's criteria for the development of motorway service areas. The criteria were (1) improving road safety, (2) enhancing the economic and environmental benefits of investment in the Motorway Network, and (3) enhancing the comfort and convenience of travellers³³.

Downing described the criteria as showing:

"a curious separation of ideas in the way in which the third objective comfort and convenience, in particular, is divorced from the first, safety"³⁴,

He explained that:

"Comfort and convenience must be a factor in road user behaviour and thus bear on safety"³⁴,

and should have been given its proper weight. He also indicated that none of the three criteria appear to recognise that there is a potential value in the environmental quality of the service areas provided³⁴. The commentary accompanying the second criterion explains that the environmental benefits are those:

"...which are conferred on other roads, towns, villages, and country areas which are relieved from the pressures and traumas of heavy traffic"³⁵.

Other shortcomings in the British system are related to the unavailability of some outdoor services such as picnic areas with toilets for motorists' relaxation, unlike the system on German, Italian and American Motorways.

In fact this playing down of introducing non-commercial facilities was one of the consequences of the emphasis on commercialism in the British system. This was explained by Downing who stated that:

"The original concept of service areas was very much dominated by the basic provision of toilets, food and drink, fuel, and facilities for repair, in addition it was necessary to park, obviously, and to do so at no great distance from the facilities"³⁷,

which resulted in making most of the early service areas more like buildings offering services with parking and some screening³⁷.

The architecture of the British service areas itself was also the source for further criticism by British writers. Nutt described the architecture of the motorway service areas as being "insipid" and even the best of being "mediocre". In addition, he explained that most of the architectural problems are traced back to the Ministry and developers, and that it will remain the same until there is a change in policy³⁸.

The existing policy judges the operators' scheme on a combination of architecture and cash return³⁹. To ensure a better architectural design, Spurrier suggested early in 1960 a three-way process to shift the emphasis from money to architecture, the process was as follows:

- "(1) Appoint top designers, develop, and lease to the best bidding concessionaire.
- (2) Hold architectural competitions and then proceed as in 1.
- (3) Hold architectural competitions, the winner to proceed as at present but on the basis of a fixed rental"⁴⁰.

On the whole issue of layout and design, Downing concluded his article on motorway service areas by explaining that:

"...the level of facility, the ambience, the creation of relaxing and comfortable surrounding to conducive to relaxing travellers and combating fatigue as well as to care for the more obvious physical and practical needs of motorists and other travellers is not being adequately provided..."⁴¹.

He suggested the provision of more land to both the existing and future service areas, which is needed for improving the ambience of service areas and the development of landscaped areas using higher standards of design, or the alternative will be the likelihood that sites will become more and more like the unrelieved and banal austerity of Watford Gap⁴².

4.4 Conclusion.

From the previous discussion of the two systems, there are direct lessons to be gained from the contrasting provision concepts. These lessons are in the degree of commercialism involved and the degree of comfort and convenience offered to travellers. However, there is an important task which precedes the provision itself and should be made clear in this context; that is the ability of the management systems and decision makers in the two countries' road programmes to produce and accommodate provision policies at an early planning stage which coincide with the planning of the motorways themselves.

Both systems although differing in the concept of provision and the degree of governmental involvement, share that common ground of being able to produce detailed policies to regulate the provision of services in advance- a mechanism that we are to some degree lacking in our approach to motorist services in Saudi Arabia. The foresight of addressing issues in motorist services in a comprehensive way, before, or at least during, the design stage of the motorway system should have

been a priority in the broader planning of a motorway system that would produce satisfactory services.

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- (32) Poorman, F. and Chamberlin, R. (1963), 'Suggested Activities for Future Roadside Development Research', *Highway Research Record*, no.23, p 39,40.
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- (34) Downing, *op.cit.*, p 5.
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CHAPTER FIVE

CHAPTER FIVE

SURVEY METHODS

5.1 Documents Collection.

5.2 Interviews.

5.3 The Survey of the Motorway Service Areas.

5.3.1 Field Work Procedures.

5.4 The Questionnaire.

5.4.1 Field Work Procedures.

5.4.2 Sampling Procedures.

5.5 Statistical Analysis.

CHAPTER FIVE

SURVEY METHODS

It is essential to have a clear understanding and factual information about the service areas, their users' attitudes, and the rules and regulations concerning their development. Such information can direct the formation of any conclusions or recommendations for the improvement of these travellers services along the Saudi Arabian motorways.

Because of the broader scope of this evaluation study, it was inadequate to use a single method to obtain the data required for its completion, therefore a variety of research methods were employed to cater for the diversity of vital information sources.

For the above mentioned reason, this study included a physical survey of all the existing motorway service areas, a questionnaire for the users of the motorway service areas, the collection and analysis of documents related to the development of motorway service areas, interviews with related bodies and other decision makers in the development of motorway service areas.

This multiple information gathering approach has the advantage of allowing the weakness of one method of data gathering to be compensated for by the strength of another¹.

For example, the limitation of the physical survey in providing adequate measures of the travellers attitude towards existing services, can only be supplied by the

questionnaire. By the same token, the analysis of documents and interviews with representatives of related bodies and other decision makers can provide solid ground for understanding the laws and regulations controlling the development of service areas, which cannot be supplied by other methods.

5.1 Documents Collection

Because of the nature of the development of service areas, which was influenced to a great extent by the laws and regulations and the overlapping interests they represent, it was necessary to gather and analyse all the available documents related to the motorway service areas. These were spread over a wide range of agencies involved in the development of these facilities. The analysis of these documents, which contains the laws and regulations in addition to the interests of the different related bodies in this matter, can enhance the understanding of their role and areas of influence on the services outcome.

To that effect, official letters were obtained from King Faisal University to the different governmental and non-governmental agencies, explaining the purpose and the importance of the research and asking for their cooperation with the researcher by providing the relevant data and assistance which were necessary for the successful completion of the research (Appendix C.1). Consequentially visits were made to each of the following agencies:

1. The Municipality of Dammam Region.
2. Ministry of Transport (Eastern Region).
3. Ministry of Finance (Eastern Region).
4. Civil Defence Authorities (Eastern Region).
5. Petromin.
6. Ministry of Agriculture and Water Resources (Eastern Region).

7. General Administration Institute (Eastern Region).
8. Ministry of Trade and National Economy, Hotels Management Section (Eastern Region).
9. Directorate of Traffic Police (Eastern Region).

Furthermore, the researcher undertook a trip to Riyadh (the country's capital) for further investigation and data collection, where the following agencies were visited:

1. Ministry of Transport.
2. King Abdulaziz City for Science and Technology.
3. Saudi Arabian Automotive Services Company (Saasco).
4. Ministry of Finance, Department of Government Properties.
5. Ministry of Finance, Central Department of Statistics.

The above mentioned bodies provided many invaluable documents which were of great importance for the successful completion of this study.

5.2 Interviews

Several extended interviews were conducted with some governmental and non-governmental officials involved in the development of motorway service areas. Some of these interviews were organized in their own right, others arose during the process of collecting documents from the above mentioned agencies. In both cases this method proved to be a successful one in providing important information not readily available in the documents and reports. Some of the information obtained by this method, not only explained the documents, but also benefited from the interviewees' experiences on a wide range of issues concerning the motorway service areas.

Interviews started with a properly prepared list of topics and points which arose during the process of reading and analysing the different documents related to the service areas. The interviewee was asked to respond to every one of the prepared points raised, and was given ample time to talk freely on that point or topic and his experience on the subject.

During the interviews notes were taken and all the details of the interview were written down promptly after the meeting.

The following list gives some of the important interviews conducted with some of the officials involved in the service areas development:

- (1) Mr. Al-Zua'bi, Abdullah. (The Ministry of Finance Office in the Eastern Region). In 27th March 1989.
- (2) Mr. Al-Batah, Ali. (Ministry of Finance and National Economy, Government Properties Section, Riyadh). In 3rd April 1989.
- (3) Engineer: Abdulghani, Hussam. (Ministry of Transport, Roads Services Section, Riyadh). In 4th April 1989.
- (4) Engineer: Al-Dukair, Suliman. (The Head of Projects Follow-up Section, in the Saudi Arabian Automotive Services Company, Riyadh). In 5th April 1989.
- (5) Mr. Batouk, Abdullah. (Ministry of Agriculture and Water Resources, Eastern Region Office, Lands Development Section). In 9th April 1989.
- (6) Engineer: Al-Askar, Abdulrahim. (Ministry of Agriculture and Water Resources, Eastern Region Office, Water Resources Section). In 9th April 1989.
- (7) Mr. Al-Hussain, Abulatif. (Petromin, Fuel Marketing Office, Dhahran). In 10th April 1989.
- (8) Engineer: Al-Saadi, Abdurrahman. (Director of Technical Affairs in the Directorate of Roads in the Eastern Region). In 11th April 1989.

- (9) The Director of Hotels Administration Section , Ministry of Trade Office in the Eastern Region. In 16th April 1989.
- (10) Captain Al-Shuraim, Fahad. (Safety Division, Directorate of Civil Defence in Eastern Region). In 18th April 1989.
- (11) Al-Harbi,M. and Al-Jumaiai, M. (Traffic Police Directorate in the Eastern Region). In 19th, 22nd April 1989.
- (12) Architect: Al-Gahnam, Saleh. (The Director of the Development Control Section in the Municipality of Dammam). Between 23-26 April 1989.

Some of the data obtained is presented in the following chapters.

5.3 The Survey of The Motorway Service Areas.

The survey of the motorway service areas was the primary source of data in this research. It was carried out by the author in early summer 1988. It was an extensive study aimed at obtaining physical data as well as an assessment of the services and facilities of the existing motorway service areas along the four motorways in Saudi Arabia. These motorways were Dammam-Riyadh, Riyadh-Taif, Makkah-Madinah, and Qasim-Riyadh. In this survey all the service areas along the four motorways were visited and all the details of every existing service were recorded in an inventory form which was developed for the purpose of this survey (Appendix A.1)

The inventory records the different details of the motorway service areas. It starts with recording the name of the motorway where the service area is located, the direction of travel (travel bound), and both the distance from origin and destination.

The inventory also documents the different facilities available in each service area, whether for the travellers or their vehicles. More over it records the details of the

service area's buildings such as their form, their consistency in character and style and their harmony with their surroundings, in addition to the views they allow from the public places. It also records the details of the building materials used, building colours, building form and style, buildings height, and layout of services. Additionally, the inventory examines the landscape quality in the service areas by recording the different plant materials used and the design function for these plants. The inventory also covers the level of signing to the service areas, the clarity of the entrances to the service areas and records the availability of parking areas- for both private and commercial vehicles.

The extent of the need for maintenance is also recorded in the inventory in addition to the outdoor cleanliness and the number of litter bins provided.

It also records the number of toilets available and the level of their cleanliness together with details of other services such as the electricity source, water source, means of lighting the site, noise problems (if any) and the source of that noise (Appendix A.1).

In addition to the inventory, the facilities and details of every motorway service area were recorded by taking photographs, and making sketches during the survey. Showing the site layout, the location of the different facilities, the circulation around the site, and the positioning of the plant materials used.

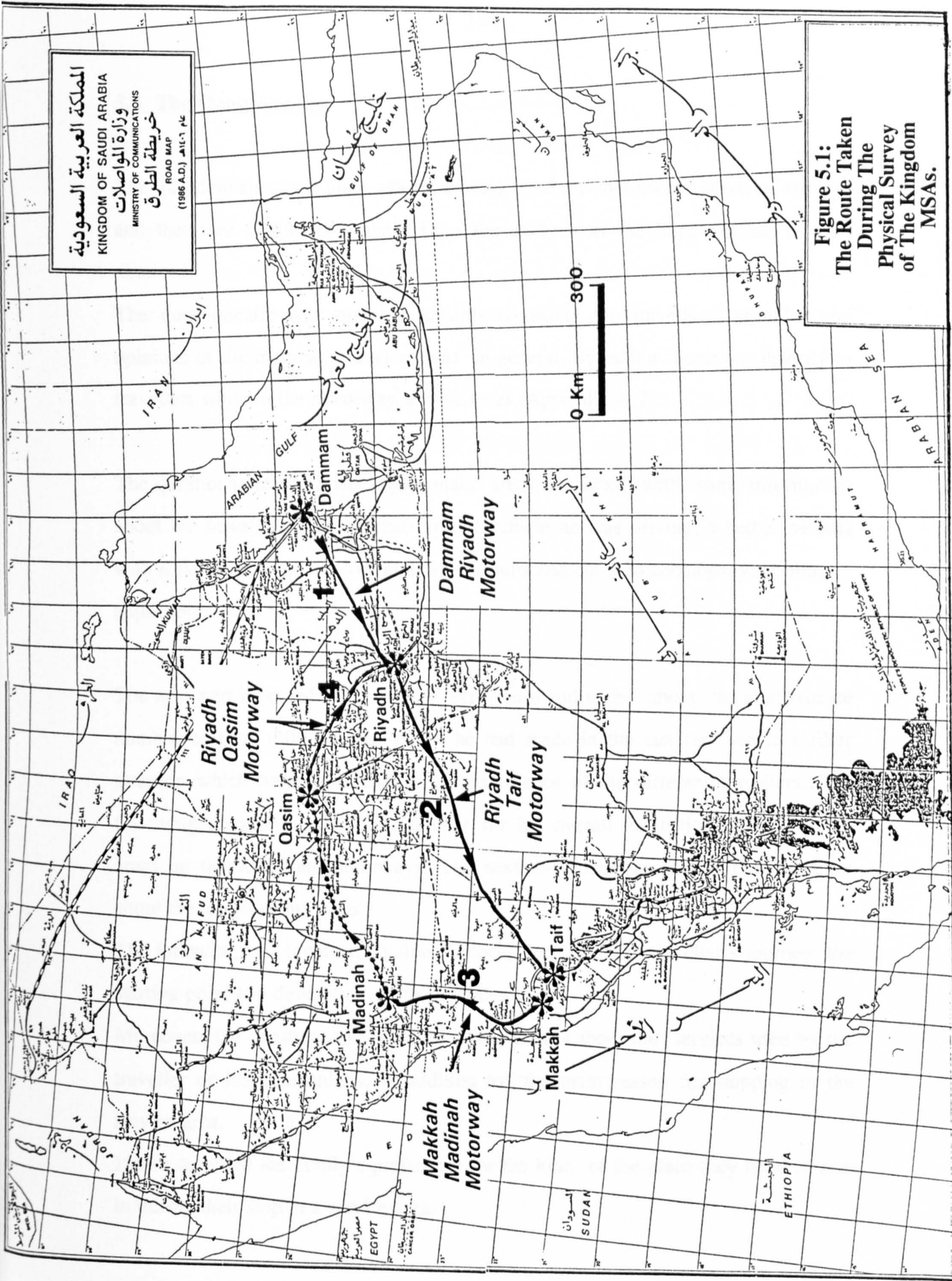
During the three weeks of this field study, the researcher was able to act like any other traveller using the motorway service areas, obtaining rest, food and lodgings. As well as gathering formal information opportunities arose to start informal conversation with the operating staff in the service areas. Time was also taken to think and take down some important notes while in the service areas' sites.

5.3.1 Field Work Procedures

A preliminary copy of the inventory form was completed in Spring of 1988 in the University of Newcastle. It was then taken on a field trip to Saudi Arabia for testing in the actual field. After testing the form with several motorway service areas it was found to be lacking in some specific details and needing some rearrangement of a few points and categories. After these necessary alterations to the first draft had been done, the new inventory form was then ready for the physical survey.

The next step was to obtain letters from King Faisal University supporting the researcher in conducting the physical survey in the motorway services along the four motorways. Additionally two other letters were delivered to the Ministry of Information offices, both in Dammam and Riyadh, asking for their permission in taking photographs while conducting the physical survey in the service areas. At the same time the researcher was preparing enough copies of the inventory for the lengthy trip which would cover the four motorways in the Kingdom.

The trip started from Dammam city on the east of the country to Riyadh in the centre, and then west to Taif and Makkah. From there, north to Madinah, and then north east to Qasim, and then south to Riyadh again, and finally back to Dammam in the east. This represent a trip of 3162 Kms, surveying 2108 Kms of motorways, where a total of 125 services were visited and surveys were conducted (Figure 5.1).



5.4 The Questionnaire

The questionnaire took place after the analysis of the motorways services' survey, and therefore benefited greatly from the analysis of the huge amount of data obtained.

The questionnaire was oriented towards recording the travellers' attitudes and opinions of the motorway service areas in general, by asking questions directly to travellers while in the motorway service areas (Appendix A.2).

The questionnaire comprised eight major areas. It started with some information about the traveller himself: what type of vehicle he was driving, whether he was with a family or not, and the number of adults and children accompanying him, if applicable.

The next part involved the travellers' experience and asked about the approximate number of trips (300 Kms or more) he had made in the last two years: a filter question which helps in knowing the experience of the different travellers. The following question asked the traveller for his overall evaluation of the service areas on the Kingdom motorways. The next two questions asked the traveller about the length of his stops.

The following part involved obtaining information about the traveller's journey, the starting point and destination of the traveller.

Moreover, the questionnaire recorded some details about the services used by the traveller or his companions, in addition to the main reason for stopping in the service area.

It also recorded the family's preference for the kind of the place they liked to stay in during their stop in a service area.

The following questions recorded the traveller's rating of the adequacy of the entry and exit roads in the motorway service areas. It also included some questions about the distance he prefers to separate every two service areas, his preference of accommodation at night when travelling on the motorway, and any additional service that he would like to be provided in the motorway service areas. (This latter question was left open-ended as it was difficult to anticipate the travellers' responses on such a question).

The last part of the questionnaire recorded the travellers' attitude towards the different facilities available in the motorway service areas. In this regard the traveller was asked to give his opinion of every facility, by listing the priority of each and rating its need to be included in the motorway service areas (Appendix A.2).

5.4.1 Field Work Procedures

The questionnaire was related to the travelling public and therefore it dealt with respondents who were constantly on the move, making it different from other surveys. Hence it could only be conducted properly with a team of surveyors, working simultaneously to insure the randomness of sampling.

The initial plan was to employ university students from the College of Architecture in King Faisal University for the field survey. But after an interview with Dr. Saati (who encountered many difficulties with the college students during the field work for his Phd research), the plan was changed. Based on his recommendation, other possibilities were examined. Hiring surveyors was discounted because of the unavailability of experienced surveyors on one hand, and the financial implications on the other. Help, therefore, was sought from the academic staff in the College and from friends who had the ability and qualification to undertake the task.

Among the members of the survey team was:

Dr.Almoajil, A. (Assistant Professor, Department of Building Science).
Mr.Albuaian, K. (Lecturer, Department of Architecture). Mr.Alkadi, A.
(Lecturer, Department of Planning). Mr.Batiour, A. (Lecturer, Department of
Architecture).

After forming the team, formal meetings were held in the College of Architecture, where the aims of the research project and the details of the questionnaire were set out, and the tasks of every member of the survey team were explained.

Meanwhile the researcher was undertaking further related tasks concerning the field questionnaire:

(1) The questionnaire was translated into Arabic, and was tested in the field with some travellers, in order to estimate the average time it would take to fill-in travellers' responses, and to check for any ambiguity or unclear terms or words used. The field test, found the questionnaire to be too lengthy, especially because of the interviewees state of travel. Therefore some questions were omitted, other questions were rearranged to achieve better flow and some were rephrased.

(2) Taking official letters from King Faisal University and delivering them personally to the stations where the questionnaires were to take place. These informed the management of the service areas of the nature of the study, when it would start and its duration (Appendix C.2.1).

(3) Preparation of maps of the service areas which were to be used during the training period, in order to make the members of the survey team familiar with the sites where they were going to conduct the traffic counts, and later as a reference during the questionnaire.

(4) Preparing official letters to be carried by all the members of the survey team at all times during the survey, explaining the nature of the study and its sponsoring agency (Appendix C.2.2). Additionally, badges were also prepared for every member of the survey team bearing the interviewer's name, the research title, and the university's name.

5.4.2 Sampling Procedures

In the inventory, which was discussed earlier in this chapter, the whole population was investigated, meaning that all the service areas on the four motorways were visited by the author and data were obtained from every individual service area.

In the questionnaire case, sampling was used for the sake of economy and accuracy, because it was impossible to ask every motorist on the four motorways for his opinion of services.

Because there is no centralized list of all possible travellers on the motorways, and because no one could possibly afford to develop such a list for use in obtaining the sample needed, another approach was adopted: that was to forward the questionnaires to the travellers in the motorway service areas. The procedure was as follows:

(1) Because of the difficulty of conducting questionnaires in the different motorways, due to economical and time constraints, and because there were many similarities between the available services on the different motorways (an outcome of uniform laws and regulations dominant in the whole of the country), Dammam-Riyadh motorway was chosen as a case study in conducting the questionnaire with users of service areas.

(2) It was found that conducting the questionnaire in two of the nine stations situated on this motorway would be an acceptable approach as that meant more questionnaires could be handled in each station. However, to ensure the representativeness of the two stations, a stratified approach was employed to choose the two stations.

To apply the stratified approach an assessment was needed of the level of services in the different stations of this road. That assessment was made possible by analysing some details of the data gathered in the motorway service areas physical survey, which was mentioned earlier.

Based on the data produced by that survey, cross-tabulations were then made between every one of the nine service areas on one side and a group of 12 variables on the other. A matrix was developed and each of the variables used was given a score depending on the quality of the service represented by that variable in each station. The scores for each of the nine stations were then added and service areas were ranked accordingly.

(3) On the basis of that ranking, the service areas were divided into two groups. One group comprised service areas which offered better services and were consequentially ranked higher. The second group comprised service areas which offered an overall lower quality of service and were therefore ranked lower.

(4) After the formation of these two groups, two MSAs were then chosen, one from each group, and became the location for conducting the survey with the motorway users. Two additional factors were also considered in choosing the two MSAs. Firstly, they were to lie on different travel bounds and secondly, they were to represent different zones of the motorway length.

The two stations were: Tashilat service area on the West travel bound (49Kms from Dammam city- 376Kms from Riyadh city), and Ajmi service area on the East travel bound: (174Kms from Dammam city- 251Kms from Riyadh city).

(5) To diversify the sample obtained for this survey, a mid- week day, Monday; and a week-end day, Friday were used as the survey days. Consequentially, traffic counts were carried out by the survey team on a rota-basis for the same days, Monday and Friday, in the week preceding the actual questionnaire week. Counts were made for vehicles leaving the motorway service areas from 8:00 am to 6:00 pm. The vehicles counts were based on 15 minutes intervals of the 10 hours to aid in the successful sampling of vehicles, as well be explained below.

(6) To insure the statistical validity of the sample obtained for the questionnaire and to reduce the chances of interviewer bias, a systematic sample was found to be appropriate. That meant taking every 4 th, 5 th, or 'n' th vehicle leaving the service area.

However, there was one difficulty in this approach: that was to insure that the fraction of vehicles taken should not exceed the survey team's ability to handle them. For that purpose the traffic counts mentioned above, which were taken one week before the questionnaire, were very important in estimating the sample fraction needed for the survey.

For the proper estimate of the sampling fraction needed, a group of factors were considered which included, the maximum number of vehicles leaving from each of the two service areas (per 15 minutes), the average time required for filling the questionnaire, how many survey team members were present, plus extra time for coping with any unexpected peaks.

After considering these variables, the sampling fraction was calculated and was: every 5 th vehicle in Ajmi service area, and every 6 th vehicle in Tashilat service

area. However, that overall estimation of the sample fraction was carried out using a stratified approach to the three sample subgroups; the sample groups were:

- (1) Private vehicles (family groups).
- (2) Private vehicles (non-family).
- (3) Trucks (commercial vehicles).

For example, in Ajmi service area every 5th private vehicle (family), every 5th private vehicle (non-family), and every 5th truck leaving the service area were stopped for questionnaire.

The only disadvantage of this systematic fraction technique was what have been mentioned by TRRU in their Recreation Site Survey Manual- an under-utilization of the survey team for periods of the day². However, it's advantages were the proper representation of the different traveller groups (families, non- families, and truck drivers); and also the proper representation of the different hours of the day.

(7) Because of the social and cultural background of the society , the people interviewed were the head of the family, in the families case; and the driver in non family cases. Because attempting to interview more than one person, in the same car, looks like a cross-examination and gives the interviewees the feeling of not being trusted.

The resulting sample of the travellers interviewed in both service areas was a total of 300 travellers. The details of each station and each travellers subgroup is shown in (Table 5.1).

Name of Service Area	Day of Week	Travellers				Totals
		Priv. Non Fam	Priv. Fam	Truck Driv.	Others	
Ajmi	Mon	32	11	17	1	61
	Fri	46	16	25	2	89
Tashilat	Mon	28	13	21	1	63
	Fri	36	19	31	1	87
Totals		142	59	94	5	300

Table 5.1:
The Breakdown of the Questionnaire Sample.

5.5 Statistical Analysis

Preparation for the analysis of the surveys' data, was one of the important tasks of this study. For that reason the researcher attended a course in the computer centre in the University of Newcastle, to enable him to use the statistical package available in the university Mainframe.

Taking that course prior to the actual field surveys was very beneficial in minimizing the time and effort needed in coding, storing, and later analysing the data.

After the completion of the motorway service areas' physical survey, all the categories of the inventory were coded according to the code book prepared in advance for that purpose. The codes were then transcribed onto the coding forms (Appendix B.1.1) and were entered in files form to the university main computer MTS*. The powerful statistical package SPSSX** was used in obtaining different statistical analysis such as means, frequency distributions, cross-tabulation and other statistical analysis (Appendix B).

Later, after the completion of the questionnaire survey, the same procedure of coding, storing and analysing the data was also adopted, and the same package was used for the statistical analysis (Appendix B).

The results of the two surveys will be discussed in detail in chapter seven and chapter eight of this research.

* MTS is the abbreviation of (Michigan Terminal System) which is implemented at the Northumbrian Universities Multiple Access Computer (NUMAC).

* SPSSX is a powerful computer program for the statistical analysis of data. Copyright: SPSS Inc., 1983, Suite 3300, 444 North Michigan Avenue, Chicago, IL 60611, U.S.A.

REFERENCES FOR CHAPTER FIVE

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CHAPTER SIX

CHAPTER SIX

GOVERNMENT POLICIES AND CONTROL

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CHAPTER SIX

GOVERNMENT POLICIES AND CONTROL

Introduction

The motorway service areas are relatively new in the Kingdom, due to the recent introduction of the motorway system itself, in the early 1980's. Therefore, most of the governmental policies and regulations controlling motorway service areas were derived from those early regulations created to control urban petrol stations and non motorway services. However, the motorists services witnessed a continuous process of change and modification in the area of policies as well as in the area of controlling authorities.

This chapter, follows chronologically the progress of the regulations controlling the development of petrol stations, motorists services, and motorway service areas; and also examines the land provision policies for these services. In addition, this chapter looks at the involvement of the different governmental authorities in the control of motorway service areas. Finally, this chapter discusses the service areas' development procedures or the process in which the service areas are usually created.

6.1 Development Regulations

Legislation has been one of the most important issues that has shaped the practices of developing motorists services in the Kingdom. The dominant motorist service in the Kingdom is the petrol station, which has been always the centre for governmental rules and regulations. Most governmental regulations looked at motorists services as petrol stations even when they were outside the urban areas and associated with other services. The comprehensiveness of the term 'service area' is quite new in the Kingdom. Therefore, many of the following regulations should be interpreted as for petrol stations if they are within urban areas, but if they are outside the urban areas they should be interpreted as either for petrol stations or service areas depending on the facilities and services they contain. However, it should be emphasised here, that before the motorway era, there were no minimal requirements for services, a situation which resulted in difficulty in deciding whether the individual services' site is a 'service area' or a 'petrol station'.

One of the earliest legislations was issued by the Municipality in 22-2-1386 A.H (June 1966), as this was the government agency responsible for controlling development. That early legislation specified that 20 metres was the minimum width the street had to be before a petrol station was allowed to be developed, and 50 metres was the minimum distance required between a petrol station and the nearest intersection or public open space. In addition, it required that the station should be able to take in enough cars and to serve them outside the road system as well as providing a minimum of one public toilet¹.

That legislation was followed by another in 23-10-1387 A.H (January 1968) which specified that no permit should be granted to any petrol station development unless approved by the Civil Defence authority (Fire Department)². This gave the Civil Defence authorities a share in controlling development.

For a period of time there were no real controls on the development of petrol stations and service areas apart from the two mentioned above. Then in 10-2-1393 A.H (March 1973) a new regulation encouraged the proper planning of petrol stations in terms of the need for them, their hazard to the neighbouring developments and following the master plans when choosing their locations. These controls also recommended that there should be a balance in the number of the petrol stations created on either side of the road, whether these petrol stations were inside or outside cities³.

As the non urban petrol stations or service areas were usually outside the jurisdiction of the master plan, their development was controlled by the closest Cities Planning Office, which designated the most suitable location for development nearest to the developer's area of preference⁴.

The Cities Planning Office mentioned above is a semi-independent municipal planning office that has branches in all the Kingdom regions, reporting to the Ministry of Municipal and Rural Affairs.

The size of petrol stations and service areas was controlled by the Royal Decree no. 23317 in 20-9-1396 A.H (September 1976), which ordained that petrol stations or service areas should not exceed 50x50 metres in area⁵. This limitation was changed in the mid 1980's with the introduction of the motorways. Most of the service areas on Dammam-Riyadh motorway, for example, were approximately 200x200 metres in area.

The Ministry of Agriculture has a role in the control of the development of service areas or petrol stations, especially when the development involves agriculture land, whether inside or outside the city limits. The regulations in this case, requires the cooperation between the City Planning Office and the Ministry of Agriculture. The City Planning Office's obligation is to study the cases individually and determine the necessity for service development, and the location and size of the land

required. After the Cities Planning Office approval, the case is then transferred to the Ministry of Agriculture for the final approval of the landuse change⁶.

The involvement of the Ministry of Transport came in the early 1980's with the introduction of the new motorway system which brought with it the need for proper entry and exit roads to and from the service areas. The Ministry of Transport produced standard drawings of entry and exit roads to be implemented when developing a new service area. The earliest official mention of these standards came in 21-9-1400 A.H (August 1980), (Figure 8.27, Chapter 8). However, these standards caused conflicts in many urban locations that had only limited space in which to fit the required entry and exit roads⁷.

The same regulation which introduced the standard entry and exit roads, also regulated the distances between the service area and the road: there should be at least 100 metres between the service area or petrol station buildings and the road.

A subsequent regulation in 15-10-1400 A.H (August 1980) reaffirmed the previous one and added that service areas should not be built near intersections or camp sites⁸.

Allowing 100 metres between the service area or petrol station building and the end of the right of way was later reaffirmed by a royal decree in 21-2-1405 A.H (November 1984)⁹. This was the latest regulation concerning service areas and petrol stations before the building of non urban services were stopped completely in 15-5-1405 A.H (February 1985)¹⁰. This will be explained under the following heading.

6.2 Land Provision Policies

6.2.1 Early Stage (Pre-Motorway)

In the 1960s, the development of petrol stations was in its early stages, yet there was no clear governmental policy concerning the provision of the required land for these services. At that time, the Municipalities' flexibility in land provision was exclusively towards residential purposes and public facilities which served all society; such as parks, parking areas, vegetable markets, fish markets, and other similar projects. Service stations were looked upon like any other commercial projects created for profit, therefore their land provision was the direct responsibility of the developer. But because they provided a public service which could not be overlooked, the Municipalities were made responsible in 2-6-1388 A.H (August 1968) for providing the land required for these projects¹¹.

The government was under additional obligation for a change in policy as they owned all the non-owned vacant lands, including those inside urban areas. The ownership of the government's lands within the urban limits were later transferred to the local Municipalities. It was therefore necessary for developers to approach the local Municipalities looking for the appropriate locations for developing service stations, especially as the Municipalities owned vast areas of land which could accommodate commercial activities beside the residential ones.

Still there remains a difference between the two landuses when charging for the land. There is an inexpensive official charge for residential projects, but a totally different approach is used when charging for petrol station projects. To insure the real market price from petrol station projects, the Municipalities' procedure was carried out in two steps. First, they obtained planning permission from the Planning Office or from the Vice Minister, for the Rural Affairs. After their

approval they called for a general auction to sell the land, with a binding condition that it had to be used for developing a petrol station¹².

With the increase in the number of petrol stations in cities and on cities' approaches the Municipalities and Civil Defence (Fire Department) authorities were asked by a governmental regulation in March, 73 to introduce more controls on the land provision for, and hence the development of new petrol stations. These controls included the assessment of the real need for the new petrol station and the degree of hazard associated with developing their proposed locations. The same regulation also recommended consulting the master plans for any pre-designated services location, as a more appropriate alternative that should have priority for development. Furthermore, the same controls recommended that Municipal Planning Offices should assign locations for service stations in their regional development plans¹³.

As a result of the situation where the majority of services were clustering in cities and on cities' approaches, the government, in the mid 1970's, felt that there was a real need to promote the development of service areas or non urban petrol stations. The reason behind the new government attitude, as it was stated in the letter sent from the head of the Ministers Council to the Ministry of Municipal and Rural affairs, was that:

"These facilities provide an essential public service in isolated locations between distant urban centres and in rural areas"¹⁴.

In addition, the previous document has also brought a change in the government policy of selling the required land in these non urban locations. In this new policy, the land cost is to be estimated by a municipal land provision committee, (which simply means an exemption from the auction selling approach usually used in selling land in urban locations)¹⁵: Consequentially that meant a reduction in the cost

of land acquisition , where the government charged less than the market price in order to lighten the burden of service areas' prospective developers . This was a positive shift in the government's attitude towards these services, which aimed to improve the convenience of the travelling public on the long distance routes.

A more explanatory document on the development of service stations and service areas on the Kingdom routes was circulated by the Ministry of Municipal and Rural Affairs in 28/2/1396 A.H (February 1976) . This document explained to the local Municipalities that they should give priority to developing the location of services that had been originally designated for that purpose . In the case of non urban locations, the designation of the location became the function of the Cities Planning Office, which reported to the Ministry of Municipal and Rural Affairs. The land cost estimate depended on the project location . For projects within the developments plans or within the municipality borders , the land is sold by the Municipality by public auction . The land cost of non urban services is estimated by a joint committee from the Emarah (the Principality), the Municipality , and the Finance Department of the area which has control over the land¹⁶.

The provision of the land required for the development of service stations was later revoked by a Royal decree issued in 24/6/1396 A.H (Feb.1976) . That Royal decree was a general decree, and stopped the sale or transfer of any governmental land, including those for service areas or petrol stations. However there was still a need for service stations, which government circles must have been aware of and so land provision for these services was re-started again in the same year by another decree. This latter decree which restored the land provision law also brought in an additional regulation: that the maximum area to be given to service stations should not exceed 50x50 metres.¹⁷ (This was later changed with the introduction of motorway service areas in the early 1980's).

6.2.2 Motorway Stage

All the regulations so far mentioned applies to non motorway services, as the motorway system had not been built. Moreover, it was clear from the documents mentioned that there was no involvement on the part of the Ministry of Transport. The whole issue of the provision of land for service areas was in the hands of the Municipalities or the Cities Planning Offices, which in either case meant the Ministry of Municipal and Rural Affairs.

In addition, all the previously mentioned regulations clearly deal with various aspects of services provision, but still lack the comprehensiveness of a general policy, where service areas are provided according to a national plan especially as the country was approaching the motorway era.

The long expected policy was almost realised by a proposed joint cooperation committee between the Ministry of Municipal and Rural Affairs and the Ministry of Transport. The initiative was taken by the acting Minister of Municipal and Rural affairs in 24/8/1399 A.H (July 1979) to form a joint committee between the two Ministries. The task of the joint committee was to designate the ideal locations for service areas on all the Kingdom routes in addition to other aspects of provision such as assigning the required facilities and ensuring fair competition between the interested developers¹⁸.

Unfortunately, no progress was made in that direction and the whole idea, although essential, reached a closed door; therefore governmental agencies took passive individual roles according to their areas of control.

The subsequent regulation came in 12/7/1402 A.H (May 1982) during the early days of motorways operation. It came to replace the previous policy of selling the land to 'service areas' developers. Instead, the land was to be rented to the

developers for a long period but at a nominal charge. The purpose of that regulation, as explained by the regulation itself, was to:

"...block any request aimed to obtain and own the land without establishing the required development, or using it for some other development inconsistent to the aims of the original provision"¹⁹.

Moreover, the same document stated that the mentioned procedure will:

"...enable the government to take back the land whenever it needs to, since it has only rented it"²⁰.

All of this shows that the government, despite all its pledges and preconditions required from the developers, was unable to supervise and control the development of service areas once the land was sold to the developers. Of course the rental system adopted had the advantage of insuring that the sites were exclusively developed for service areas, however it was not the absolute solution to all the service areas' problems. For example, it could not ensure the level of the services and facilities developed. This can only be achieved by a change in government practices in the areas of control and supervision of service areas development.

With this rental approach, close attention had to be paid to renting developers as they would tend to invest the minimum amount of capital (unlike developers who own the land) because at the end of their lease period they would lose their investment in the structures of the service area left behind.

Almost three years later, in 15/5/1405 A.H (February 1985) a Royal decree was issued to prevent the development of any new service stations or service areas on the Kingdom main routes. Because as stated in this Royal decree:

"...many of the existing developments, including petrol stations and service areas, are not to the standards that match the national development and progress"²¹.

Many Municipalities could not interpret what were the main routes, or decide where petrol stations or service areas should not be developed. This was later clarified by a circular from the Ministry of Municipal and Rural Affairs as:

"The main routes outside the urban built areas"²².

The context of the two previous circulars clearly suggests that the municipal controls were quite successful in urban areas and had a better outcome than those on remote or non urban locations. This finally led to the exemption of urban service stations from that ban on services development.

A following decree in 2/8/1405 A.H (April 1985) exempted the Saudi Automotive Services Co. (SASCO) from the previous prohibition of developing services. There were two reasons behind this exemption as was explained in the decree. First, if SASCO was not exempted, it would be prevented from fulfilling the main reason of its creation, that was the provision of petrol stations and service areas in cities as well as on main routes between cities. Second, the government was convinced that SASCO had the ability to develop petrol stations and service areas of very high standards which would reflect the country's progress and development²³.

This decree of 1985 has had the final result of restricting the development of service areas along the Kingdom's motorways. Additionally, it is clear that individual developers were not trusted any more by the government, when it come to remote or non urban locations.

6.3 Controlling Authorities

There are many governmental agencies involved in the development of service areas. They include the Ministry of Municipal and Rural Affairs, the Ministry of Transport, the Directorate of the Civil Defence (Fire Department), and the

Ministry of Finance and National Economy (Government Properties Section). Yet their power over the development of the motorway service areas vary according to the involvement of each. The Ministry of Municipal and Rural Affairs seems to have the greatest power among the mentioned governmental bodies, because it has the major share of control over all planning and architectural developments. Any construction permits should have to be obtained from this Ministry branch controlling the area where the development is taking place. Service areas are treated similarly, although they require authorisation from the previously mentioned governmental authorities. The Ministry of Transport, for example, has built the main road network and continues to operate and maintain it; along with the ownership of the right of way- this makes it eligible for a share in the power of controlling service areas development.

The Civil Defence's (Fire Department) responsibility is related to the compliance with safety and fire prevention regulations. The Ministry of Finance's involvement comes through its Government Properties Office, which is responsible for land provision, since it owns all public lands not used by the government authorities or owned by the private sector.

A further governmental body, the Ministry of Agriculture becomes involved if the service area development was to occupy agriculture land. Therefore if a developer chose an agricultural site for his service area then the Agriculture Ministry is directly involved in the process of granting permission for changing the land use.

6.3.1 The Ministry of Municipal and Rural Affairs

From an early stage, the local municipalities (which were part of the Ministry of Interior at that time and became part of the Ministry of Municipal and Rural Affairs after it was created in 1976) were given control over all the developments within their boundaries. This was stated by the Royal Decree no. 8723 dated 1357 A.H

(1937) . The Royal Decree in section 9-B specified that, among the Municipalities duties is to:

"...supervise structures and buildings, public and private according to its specific regulations"²⁴.

Therefore, service stations were among the private structures needing the Municipalities' supervision and permission to operate.

Not only that, but the Municipalities were also providing the land which accommodated the service stations or petrol stations (as they owned all undeveloped governmental lands within their boundaries). Such provision was approved by the Ministry circular no.2100/3 in 2-6-1388 A.H (August 1968), which enabled the local municipalities to sell the land needed for these projects, after obtaining a planning permit or the approval of the Vice Minister, for rural affairs²⁵.

At that period, most of service stations were located either inside urban areas or on the approach to urban areas. In both cases they were within the Municipal boundaries and thus under municipal land provision policies and permission rules. At the same time non urban service areas were scarcely found along long distance routes. A good example of this was Dammam-Riyadh old road, which was one of the major roads in the Kingdom, yet it had only one non urban service area. The road remained like that until the beginning of the 1980's, when the new motorway was constructed and new service areas were created.

The net result was a strong municipal hold on the service stations development, since the majority of service stations were developing within municipal territories. That explains how most of the rules and regulations concerning service stations were always aimed at urban service stations describing their requirements in terms of location, distance between them, and other aspects of that nature, which are usually irrelevant to non urban service areas.

With the new motorways, came the involvement of the Ministry of Transport as the agency which constructed these motorways and therefore responsible for their upkeep. Nevertheless, the Ministry of Municipal and Rural Affairs was deeply convinced that they should be the dominant controllers of these developments and that the Ministry of Transport, like other governmental bodies act as consultants in the development process, (the consultation process was only to appoint the locations, in the Ministry of Transport case)²⁶. Some of the Municipalities were confused in the beginning as to who should be the licensing authority, especially with the involvement of the Ministry of Transport.

The whole situation was later clarified by the Ministry of Municipal and Rural Affairs in their circular no.686/1 in 5- 5-1401 A.H (March 81). The circular stated that:

"...providing documentation for the Ministry of Transport is only intended to consult them on the service areas locations, to avoid any contradiction with their future plans for the roads"²⁷.

Mr. Al-gahanam, the director of the development control section in Dammam Municipality explained that any proposed building wherever it was, should obtain a licence from the local Municipality in the area prior to any work in the field. That is also the case with petrol stations and service areas even if they were in remote non urban locations²⁸.

But some times conflicts arose between the Municipalities themselves over the licensing of non urban service areas, because in remote areas it is difficult to establish where the municipal boundaries lie. Mr. Al-gahanam explained that there aren't any maps or publications showing the municipal areas of authorities beyond their urban settings. He also mentioned that, in one instance his authority (in Dammam) licensed a service area on Dammam-Riyadh motorway, although it was within the boundaries of Abqaiq Municipality. In his opinion, that was justified

because the Ministry of Transport sent them the paper work for issuing the required licence and they simply did so!²⁹.

That transgression caused a delay when the operator later went to fetch his vocational licence from Abqaiq Municipality, the closest municipal authority to his service area. This case of unclear boundaries explains that overlappings in authorities' area of jurisdiction are also possible within the same governmental agency (the Municipalities in this case).

The major shortcoming of the Municipalities possibly lies in their follow-up of service areas after they were licensed, i.e. there was no way of insuring that the development plans were going to be executed according to the licence issued. This situation has resulted in very clear differences between non urban service stations and the strongly controlled urban ones.

Electric power supply was the most effective element in the success of Municipalities' control in urban projects. Projects were simply not supplied with electricity unless they had fulfilled all the municipal rules and regulations. Unfortunately for the Municipalities, the supply of electricity was of no concern to the majority of service area operators as their services were usually located outside the electric power network. Hence the control of the supply of electricity was not an effective approach in non urban situations.

As an alternative and to improve the follow-up of non urban service area projects, Dammam Municipality tried another method. It used the supply of fuel as a means to insure the fulfilment of the municipal rules and regulations. The Municipality wrote an official letter to PETROMIN, the only fuel distributor in the Kingdom, asking their Eastern Province office not to supply new service areas with fuel unless they provide written approval from Dammam Municipality (Appendix D.2). The sole reason for this was stated in the letter:

"...to insure the completeness of the new service areas according to their licences"³⁰.

This failed as it was very difficult to control fuel sales and to whom it is sold. The problem was especially difficult because the sales of PETROMIN's Eastern Province branch cover a very large geographical area. Moreover, there are some large companies who buy huge quantities and redistribute them to smaller operators. Mr. Al-gahanam commented that the follow-up is not easy and it wouldn't be successful without a complete and competent institution which is devoted to this job³¹.

6.3.2 Civil Defence (Fire Department)

One of the earliest regulations was that which engaged the Civil Defence authorities in the process of licensing new petrol stations in the Kingdom. A command was circulated by the Municipalities Ministry in 22-2-1386 A.H (June 1966) to all of its offices in the Kingdom, ordering them not to licence any petrol stations unless approved by the Civil Defence authorities in their area³². The reason was, as mentioned in the order itself:

"...to be certain that the station has been built in a safe way, and has all accident prevention means"³³.

From that date the Civil Defence authorities became partners in the control of the development of service areas who were to be consulted whenever a new petrol station was to be built. But as many Municipal areas at that time were not covered by the Civil Defence services, a subsequent direction was issued in 23-3-1968 (June 1968) to solve the problem. In this respect the Police Departments were asked by the Ministry of Interior to act on behalf of the Civil Defence if they were not available in the region³⁴.

In 23-7-1402 A.H (May 1982), more than ten years after the issue of the first regulation, a conflict arose between the Municipality and the Civil Defence over

the representation in the control of service areas and petrol stations development. That reached a peak when Dammam Municipality issued a licence for a non urban service area on Dammam- Abqaiq road, without obtaining the consent of the Civil Defence authorities. The Civil Defence officials complained to the Ministry of Municipal and Rural Affairs. Although Dammam Municipality argued that they only granted a preliminary permission to the developer, the Civil Defence responded: how had it been opened for the public?³⁵.

The result was a general demand from the Ministry of Municipal and Rural Affairs to all the local Municipalities to act according to the rules and regulations and to work in cooperation with the Civil Defence authorities when licensing a service area or petrol station. In addition, it demanded that a representative from each of the two authorities should together visit any proposed service area location and write the necessary report. The developer should also sign a pledge to employ the Civil Defence instructions and regulations and to open a file with the Civil Defence authorities before starting the construction³⁶.

A subsequent command was issued by the Ministry of Interior in 18-4-1406 A.H (January 1986), almost four years after the previous one. It too was concerned with the fulfilment of the Civil Defence conditions and regulations; for all building types in general and for petrol stations in particular³⁷. What made this command different was that it was issued by the Ministry of Interior and was directed to the Emarat (Principalities) of the Kingdom. In it, they were asked to make it clear to the local Municipalities in their regions that no permission should be granted to any petrol station or service area unless it was approved by the Civil Defence authorities in the area³⁸.

The usual procedure was to communicate with the local Municipalities through their Ministry, but in this instance, it seemed that the Ministry of Interior wanted a stronger approach. Hence it used the Principalities' power, since they have the

highest administrative authority over other government offices in the regions, including the Municipalities.

Using this approach suggested that there was some negligence from Municipalities towards the Civil Defence role in the control of development. This led to the direct involvement of the Ministry of Interior to rectify the situation, especially as the Civil Defence was one of the Ministry of Interior's departments.

One month later the Ministry of Municipal and Rural Affairs repeated the same command to the local Municipalities as a confirmation to the steps taken by the Ministry of Interior³⁹.

6.3.2.1 Civil Defence Codes and Regulations

The only contribution of Civil Defence Directorate was the issuing of the safety instruction booklet for petrol stations or service stations in 1403 A.H (1983). It was based on the codes of the Saudi Arabian Standards Agency, the National Fire Protection Association in Massachusetts, USA and those of various other nations⁴⁰.

This booklet gave many detailed regulations and safety needs in petrol stations, like the distance from the road, the safe location of dispensing pumps and dispensing islands, the dimensions of the dispensing islands, the tank location and construction methods. It also described other details like the required pipes and fittings, safe electrical installation, adequate fire precautions, and the necessary fire fighting equipment. It even covered more detailed areas such as the wording of petrol station' signs and some specifications of workers' uniforms and shoes⁴¹.

A thirteen page supplementary booklet was issued in 1406 A.H (1986) and dealt with other details such as the size of petrol stations, the relation between the size and the number of dispensing pumps, the safety details of the suspended dispensing

pumps, the distance between service areas in the same direction of travel, and the safety regulations for old petrol stations⁴².

(A) Overlapping in Control

In some areas of the Safety Instructions Booklet, a clear overlap can be seen between the authorities of the Civil Defence and the Municipality. Under the General Requirements section a clear overlap can be seen in the instruction booklet mention of the number of toilets required, the finishing details of these toilets, and the number of drinking fountains required⁴³. It is clear that these details were not a result of an agreement and cooperation between the Civil Defence Authorities and the Municipalities, but demonstrated a real overlapping of roles between the two bodies and double standards, as such details should be among the Municipalities' areas of concern.

Moreover, the Civil Defence Directorate in their supplementary booklet required that petrol stations should be constructed under the supervision of an approved architectural office. That office, at the end of the station construction, should write a pledge declaring its direct responsibility for the technical and structural works performed. This is another area of overlapping, since the dealing with the architectural offices has always been the duty of the Development Control Section in the Municipalities and had nothing to do with the Civil Defence Directorate.

(B) Urban and Non Urban Services

The booklet is essentially related to urban petrol stations. This can be seen from the definition of the service station given in the beginning of the Safety Instructions Booklet and from the description of the distance required between the fuel storage

tank and the surrounding streets, in that the distance was so short that it could not be applied to a motorway situation.

This was also confirmed by the context of the supplementary booklet issued three years later, as it spoke about the 50 metres minimum length of the service station along the road, which is far less than the length of motorway service areas or non urban services. Also, the protection given to neighbours from the splash of carwash water could only be interpreted in urban locations.

Some of the rules in the booklet are applicable for both types of service stations, urban and non urban. Others, are limited to urban locations. Therefore, there should be some safety consideration for each type.

The minimum distance required from the nearest intersection being 200 metres is acceptable for urban locations but clearly inappropriate for motorway exits. Also the 1000 metres minimum distance between petrol stations in the same direction of travel is acceptable for urban areas but uneconomical for motorway situations.

(C) The Need for the Updating

Among the criticisms of the Civil Defence regulations was that they needed continual updating. In an interview with Eng. Suliman Al-Dukair, the Director of the Planning and Follow-up Department in SAASCO (The Saudi Automotive Services Co.) he stated that:

"There were many outdated safety regulations, and still being enforced on the developers of service areas"⁴⁴.

He also added that:

"there should be different strategies in fire fighting regulations which distinguishes between urban petrol stations and non urban service areas"⁴⁴.

That was also confirmed by Captain Fahad Al-Shuraim from the Safety Division in the Eastern Province Directorate of Civil Defence. He explained that:

"It has been more than six years since the writing of the Safety Instruction Booklet, and many improvements had been achieved in the state of art, which calls for a parallel revision of the existing regulations and practices⁴⁵.

(D) The Need for the Follow-up

Another area of shortcoming on the part of the Civil Defence Directorate was in their follow-up of the service stations after construction to insure that their regulations and standards were met by the developers. They usually do a good job in cities, but fall short when it comes to remote or non urban locations i.e motorway service areas. This resulted in a noticeable difference between the two locations in applying the Civil Defence rules and regulations.

In one of the urban locations, within the limits of Dammam city, the operator erected the required sign near the exit which simply said: " Drive Carefully when joining the traffic". Nothing was amiss but it was followed by another message saying:" According to the regulations of the Civil Defence Directorate "!.

This shows the extent to which urban service stations' operators followed the rules. The latter statement was not required, but was put there as an additional attempt to conform by the operator.

6.3.3 The Ministry of Finance and National Economy

The role of the Ministry of Finance and National Economy arose from the fact that it owned governmental properties, including the empty lands outside municipal boundaries which were usually obtained for service area projects. Until the mid 1970s that Ministry's role, as part of a joint committee which also included the

Emarah (principality) and the Municipality of the area, was limited to the evaluation of the land cost of the service areas outside the urban locations⁴⁶.

Towards the 1980s the Ministry of Finance's involvement increased and became a partner in the development of motorway service areas. In the process of this change the Ministry of Municipal and Rural Affairs actually circulated a command to the Municipalities in 15/10/1400 A.H (August 1980) telling them that they should cooperate with an appointed representative from the Ministry of Finance in the preliminary stages of studying the development of any service area⁴⁷.

In addition, the final contract for leasing the service areas locations to the developers became the direct responsibility of the Ministry of Finance (Appendix D.3). Therefore the Ministry started leasing the services land to the operators of these facilities according to the government rules concerning these facilities. The contract duration was for ten years which could be extended to another ten years or less if the operator applied for such an extension six months prior to the expiry date, and if the Ministry accepted that extension request. The contract also included some legal aspects, such as the prevention of any concealed rental deal or transfer of ownership between the original developer and another one, where the original developer leaves the service area project to another operator⁴⁸.

Moreover, the contract contained different technical aspects such as requiring the fulfilment of the Ministry of Transport's regulations concerning acceleration and deceleration lanes and the safety requirements associated with these lanes. However it failed to give any details explaining what these safety requirements were. In addition, the contract required space leaving between the service area and the motorway according to the rules and regulations of the Ministry of Transport. It also required the provision of tyre and oil service facilities with all the necessary hoists and pumps. Furthermore, the contract also required the provision of separate toilets for men and women; and the provision of rest area which should include a restaurant and a carpeted Mosque for the performance of prayers⁴⁹.

According to the contract the operator was also required to supply all the previously mentioned facilities with water and electricity, as well as properly maintaining all the facilities and structures, so they would always be kept in good repair. In a general statement in the contract, the developer was also required to implement all the technical regulations usually applied in such facilities and structures. In addition, the developer was also required to obtain all necessary permission from the different governmental agencies involved in approving the project construction⁵⁰.

Among the shortcomings of the Ministry of Finance's contract was that the original contract period of ten years was fairly short, especially for a committed operator wanting to develop responsibly by investing large capital. The period given was inadequate especially if renewal was not guaranteed, and was subjected to the approval of the Ministry of Finance. This resulted in a lack of security for the operator which in turn had a great influence on the physical outcome of the service area. In the U.K for example, the government leased the motorway service areas sites to operators for longer periods of time-fifty years, which naturally was quite reasonable for the developers.

What exacerbated the situation and left operators totally insecure, was the fifth section of the contract which simply stated that:

"If the land was needed for any public interest; then it is the operator's duty to remove all his structures from the site. The operator in this case has no right to claim any compensation from the Ministry of Finance for the removal of these structures"⁵¹.

The uncertainties made the developer hesitant to invest properly in the buildings and facilities of the service areas. Therefore, the last two conditions, of limiting the lease period to ten years and the removal of the service area structures for any public interest are not necessary and should be revised if the development of

service areas to high standards is to be promoted. In fact, it is not likely that the government will need all service areas sites for a sudden or an unexpected purpose. However, any site, with the slightest potential for future need, can easily be exempted from being developed as a service area. Moreover, the government should review the length of the lease and increase it, as that will definitely have a positive effect on the outcome of the structures and facilities of the service areas.

6.3.4 The Ministry of Transport

Involving the Ministry of Transport in the development of service areas at an early stage is an obvious and justified action, because of the strong relation between this Ministry and the roads and their users. However, this involvement, in contrast to other governmental bodies came later. The earliest mention of any communication with this Ministry, regarding the development of service areas, came in 1979. At that time the major motorways were in various stages of design and construction⁵². Prior to the motorway era, the development of service areas was principally the function of the Municipalities in urban locations and the Cities Planning Offices in non urban or remote locations.

The initiative for coordination with the Ministry of Transport came from the Acting Minister of Municipal and Rural Affairs in 24-8-1399 A.H (July 1979). The aim of that initiative was one of the missing variables for creating better services along the Kingdom's motorways. It called for the formation of a joint committee between the Ministry of Municipal and Rural Affairs and the Ministry of Transport. The task of the joint committee was:

"To designate the ideal locations for service areas on all the Kingdom's roads, assign the required facilities needed in every location, and insure good publicity among interested operators or investors by the Municipalities, which in turn would result in fair competition for better facilities and better designs"⁵³.

But unfortunately, no progress was made in that direction and the whole idea although essential reached an end.

As a result of the absence of coordination, governmental departments took passive individual roles in regard to the development of service areas. The Ministry of Transport's role stemmed from the fact that it built the motorways and therefore should maintain and keep them in good condition. But that involvement was confined by the long established municipal control and domination on all developments. Moreover, the unavailability of the required landscape and architectural professionals in the Ministry itself helped in this confinement. All of that conspired to limit the Ministry of Transport main contribution to two areas only. These areas were: the location of service areas and their entry and exit roads.

6.3.4.1 Locations of Service Areas

The major disadvantage of allocating service areas by the Ministry of Transport was that it dealt with service areas as single developments taking place from time to time on the different motorways. That approach lacked the foresight of the accumulating patterns of provision on the motorways, where service areas were clustering in certain areas and lacking in many others.

What really was needed from the beginning was a comprehensive plan for service areas provision on all the motorways based on the needs of each. Unfortunately, the Ministry of Transport's concern was limited to small standard details of service areas locations, such as the required distance between the service areas and intersections or camp sites, as well as to other more specific details like the distance from nearby bridges, overpasses, sharp curves, and the difference in level between the site and the motorway. Other than that, the matter was left in the

hands of developers to choose the locations that they thought appropriate for their service areas and then gain consent from the Ministry of Transport and other governmental bodies thereafter.

6.3.4.2 Entry and Exit Roads

Controlling the entry and exit roads was also left for the Ministry of Transport because these roads were links between service areas and the motorways, and were thus the Ministry's prime responsibility. The Municipality, therefore, produced prototype entry and exit roads which were to be applied to all the Kingdom's motorway service areas, see (Figure 8.27, Chapter 8). A copy of that prototype entry and exit roads was then given to the service area developer, who signed a pledge to incorporate it into the development. But unfortunately, as in other aspects in the development of service areas, the government failed in its follow-up procedure, thus regulations were not implemented by many developers.

6.4 Development Procedures

The usual procedure for developing service areas starts either with the Municipality of the area where the development is taking place or with the Ministry of Transport. Depending on the location of the development site, the procedure starts at the municipality, if it was within a municipal boundary or otherwise it starts at the Ministry of Transport. The next step is to ensure that there is no hold on the land whether from the Ministry of defence or from other establishments, such as the Arabian American Oil Company (ARAMCO) in the Eastern Province. The location is also checked for any private ownership.

Moreover, the site should be located outside the range of agriculture lands, otherwise approval should be obtained from both the Cities Planning Office and the

Ministry of Agriculture. The Cities Planning Office in this case, should assess the need for the location and the size of the area to be developed. Then it goes to the Ministry of Agriculture for the final say on the new development.

According to the Road Services Division in the Ministry of Transport:

"Any service area development should have their approval regardless of the location, whether inside or outside towns. The Municipality's role comes later in licensing the actual construction of the service area"⁵⁴.

The Ministry of Municipal and Rural Affairs looks at it from another angle:

"The Municipality has the sole control over the development whether inside or outside urban areas and it only consults the Ministry of Transport for the proper locations of the service areas, in order to avoid any conflict with the future plans of the Ministry of Transport' roads"⁵⁵.

The two different opinions mentioned above show an obvious difference in interpreting the regulations controlling the development of service areas.

Wherever the procedure started, the next step is to seek the approval of the partners in the service area development.

After the approval of the location, the developer makes the required plans and circulates them among the above mentioned authorities for approval. At this stage, the Civil Defence authorities examine the safety and fire prevention procedures in the development plans. If they are satisfactory, then they give their approval for the development.

The Ministry of Finance acts as the landlord through its Government Properties Department, which is responsible for letting the land to the service areas developers.

In one of the cases of service areas development on Dammam-Riyadh Motorway, the whole approach was reversed. That is because the developer went directly to the

Ministry of Finance branch in Dammam instead of going to the Ministry of Transport branch. The apparent explanation was that the developer wanted to be more secure by going directly to the land lord. Also, it reflected a key issue in service areas development in the Kingdom: the success in obtaining the land simply means the success in developing a service area.

The paper work takes a long time before the service area is finally approved and construction permits are granted. The approval of the above mentioned service area took from 3-8-1403 (May 1982) to 9-7-1404 (April 1984), almost two years before the developer could start his project. The developer's application started at the Government Properties Department in the Ministry of Finance branch in Dammam accompanied by a sketch showing the general location of the site. The same office then sent all the paper work with two letters to the Ministry of Transport and Civil Defence offices in Dammam for their opinion. The paper work went first to the Ministry of Transport office which required certain conditions on the entry and exit roads. Then it was sent to the Civil Defence office who agreed to the plans produced by the developer. The whole thing went back to the Ministry of Finance. Again, the Ministry of Finance sent the whole file this time to Dammam Municipality asking if they have any reservations about the location or the development. The Municipality agreed but demanded that the Ministry of Transport's conditions, mentioned earlier, should be met. Then it all went back to the Ministry of Finance office and after few weeks the land was rented to the developer. However it took the Ministry of Finance office almost three months before their surveyor finally released the land to the developer. Following that, the developer went to obtain construction permits from Dammam Municipality. Part of the Municipality procedures was to send the developer to the Electric Power Company and Water and Sewage Department, where he signed pledges not to demand their services in the future, since his building was outside their networks. This is a procedure usually used with urban developments outside

the services network, used here as an additional assurance against any future conflict. In compliance with the Municipality rules, the operator had also contracted with an architectural office to supervise the actual construction as his consultant. Finally, the developer was given the right to start building the service area. Unfortunately, the operator decided to leave the whole plan to another operator. (This of course is not recorded in any government files and documents, but amounted to an inside deal between the two operators). In fact, the second operator, who finally developed the site was more established, had been in the business for a long time, and had more qualifications to operate the service area, although he may have been lacking in the original operator's abilities to secure the land. The motorists were the only losers in that deal, since the second developer would recover the extra charges, arising because of the deal, from the operation of the service area.

In the contract, rules were very clear; the Ministry of Finance office put many conditions before letting the land to the original operator. The seventh article of the rental agreement stated that:

"It is illegal for the developer to rent the project through a concealed deal or transferring the contract to another operator, unless he obtained a written approval from the Ministry of Finance allowing him to do so "⁵⁶.

This illustrates very well the need for continuous supervision on the projects, even after permission was given. It is not enough to draw up strong legal contracts, but there should also be a follow up to implement them and to take the necessary action when their terms are violated.

Moreover, the developers should also be chosen according to their experience in the field and their ability to develop service areas in the best possible way. That also

means encouraging competition between different operators in terms of producing better buildings and facilities in the service areas.

The spread of the control and authority over many governmental departments add to the problem, in that it increases the time for gaining permission in the first place. It also makes the follow up even harder. Therefore, service areas should be under the control of a single committee whose members could all be drawn from the different governmental bodies engaged in the development of service areas. Then they could take prompt decisions and follow up their implementations more easily.

6.5 Summary and Conclusion

From the previous analysis it is clear that the majority of governmental policies controlling motorists services came in stages, in response to some obvious needs, to rectify a situation, or to solve a problem, which lacked the continuity and the comprehensiveness needed in such policies. Even when the motorways were established in the early 1980's, no comprehensive national policy was introduced in advance to cope with the new situation. In other countries' experiences, like the U.K and the U.S.A, planning policy for motorists services preceded any actual field progress.

With the absence of a nation wide plan, the initiative for choosing the motorway service areas' locations was left to the developers themselves, finally leading to unsatisfactory distribution patterns of services, as will be seen later in Chapter 8.

Moreover, the lack of coordination has dominated most of the relations between the different governmental authorities. For example, the facilities demanded for provision in service areas were divided between three different controlling authorities, although the involvement of some of these authorities was sometimes outside their areas of major concern.

This lack of coordination has made the development process of the single motorway service areas a lengthy one and caused overlapping and some times conflicts between the controlling authorities.

Moreover, there are some additional factors contributing to the inadequate motorist services , amongst these are some of the terms included in the contracts of renting the service areas locations. These conditions cause uncertainties to developers, and consequentially acted negatively in the provision of proper investment in the services and facilities of the motorway service areas. For instance, the conditions which limited the rental period to ten years and gave the government the right to order the removal of the service area at any time if the location was needed for any public interest project, should be changed, in the interest of users, and to create better services.

Another major issue is the need for an adequate follow-up of service area projects, to insure that their facilities and services are being provided according to the regulations and standards set for them.

The existing supervision and follow-up practices are unsatisfactory. All the governmental authorities engaged in the control of service areas development are partially liable for the inadequate motorist services, which were described by the royal decree as:

"...[being] not to the standards that match the national development and progress"⁵⁷.

Which led to the prevention of developing any more motorists services on the Kingdom main routes, outside the urban limits.

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- (48) Ministry of Finance and National Economy, Government Properties Department, 'Rental Contract Form for Service Areas' Sites', 2 pages.
- (49) Ibid.
- (50) Ibid.
- (51) Ibid.
- (52) International Road Federation (1981), 'The Saudi Arabian Highway Program : An IRA Case History', Publication no.8106, Printed in USA, p.9.
- (53) Regulations, Bylaws, and Directions, Vol.7, op.cit., p.259.
- (54) Personal Interview with Eng. Abdul Gaffar, H. , Engineer in the Road Services Department in the Ministry of Transport, At his office in the Ministry in Riyadh, In 4th April 1989.
- (55) Regulations, Bylaws, and Directions, Vol.7, op.cit., p.264.

(56) Ministry of Finance, 'Rental Contract Form for Service Areas' Sites', op.cit., p 2.

(57) The Office of the Prime Minister (February 1985), op.cit.

CHAPTER SEVEN

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CHAPTER SEVEN

FACILITIES **IN THE MOTORWAY SERVICE AREAS**

7.1 Introduction

This chapter and the following one will be dealing mainly with the field survey results of services and facilities situations in existing motorway service areas. This chapter is related to the facilities available in motorway service areas, one of the major aspects affecting the performance and quality of the motorway services areas. According to the inventory, there is a total of 125 service areas along the four motorways studied. However these service areas offered different kinds of facilities, some were for the travellers and others for their vehicles. In addition, these facilities had variable levels of availability.

To have a better understanding of the existing motorway service areas, it is important in this chapter to examine the background of government regulations concerning the provision of facilities, the nature of available facilities in existing motorway service areas, and the different factors related to the availability of these facilities. These factors will include facilities usage levels, their importance to travellers, and their levels of demand by responding travellers.

The background of facilities provision regulations in this chapter is derived from the literature on governmental policies and control.

The assessment of the nature of facilities and availability rates is based on the findings of the inventory carried out in the MSAs along the four motorways under

study. Moreover the assessment of the three remaining variables: usage, importance, and demand of facilities is based on the result of the questionnaire conducted with the service areas' users.

7.2 Facilities Provision Regulations

As mentioned in the earlier chapters the three bodies who operate regulations or codes of practice regarding the provision of specific facilities in the motorway service areas are: the Ministry of Transport, the Ministry of Finance, and the Civil Defence authorities.

As explained earlier in chapter three, the Ministry of Transport ordinance requires the service areas to be:

"...centred around fuel dispensing station and contain a small cafe for hot and cold drinks, toilets supplied with running water, and a place for oil and tyre services"¹.

The role of the Civil Defence authorities, as explained earlier in Chapter Five, was centred around safety procedures and fire prevention. However they ordered some facilities to be provided in the service areas. Their ordinance was meant originally for petrol stations (urban ones in particular), but because service areas had petrol stations as well as other facilities, the same ordinances were prescribed in their case. The ordinance required developers to provide at least two toilets, one for ladies and another for men and nearby two drinking fountains².

Among the different agencies involved in the development of service areas, the Ministry of Finance is considered to be the landlord, as it issues the land rental contract which officially hands over the service areas sites to developers (Appendix D.3). Moreover, as explained earlier in chapter five, this agency's demand for facilities is laid out in the land rental contract. The facilities demanded

in this contract include a petrol station, toilets for ladies and men, oil and tyre service, a restaurant, and a mosque³.

If we look at the facilities demanded above we find toilets were mentioned by all the three agencies; some of the remaining services were demanded by two agencies (namely the Ministries of Finance and Transport), such as fuel, oil, and tyre service.

The rest of the services were demanded by one of the three agencies. For example, drinking fountains were demanded only by the civil defence authorities although travellers' facilities provision is considered outside their area of normal interest. Their area of interest usually centres around safety and fire prevention.

The provision of mosques is another service which was demanded by just one government body, that was the Ministry of Finance.

Another example is the demand for a small cafe to provide hot and cold drinks, which was demanded by just the Ministry of Transport. This service was a desirable one in service areas if it was to be part of a complete catering facility. But, being mentioned as the only catering service wanted by the Ministry of Transport, raises some doubts as to the ministry's foresight and understanding of travellers needs. Fortunately though, the Ministry of Finance had at least required the provision of restaurants, which rectified some of the Ministry of Transport's shortcomings in catering facilities. Nevertheless, this overlap in ordinance for the provision of facilities by government bodies seems a rather negative approach. One of its bi-products resulted in difficulty in compliance with the ordinances themselves and increased the areas of uncertainties in terms of the definition and nature of the facilities required.

If we look at the existing facilities, as will be investigated in depth in the following sections, we find many services exist in motorway service areas although they were

not mentioned in the government regulations or ordinances mentioned above. The main reason behind the presence of such facilities must have been a commercial one, especially for services like groceries, motels and the like.

However, on the non commercial side there was a limited presence of some services which were voluntarily provided by some operators, although they did not involve any direct economical gains. These services include children's play areas, picnic areas, and shaded parking facilities.

7.3 Nature of Facilities Available in Motorway Services Areas

It is important to investigate the background and nature of the available facilities in these service areas as it will lead to a better understanding of the existing motorway service areas. Therefore, this section will examine the MSA's facilities individually under the following groups:

- (1) Travellers Facilities.
- (2) Vehicles Facilities.

7.3.1 Travellers Facilities

The majority of facilities in motorway service areas are oriented to serve the travellers themselves, which include many services of different nature, as will be explained below:

7.3.1.1 Groceries

Groceries in service areas range from small shops to medium size food stores, where food, drinks, and other travellers' supplies are on sale. In many of the service areas, groceries offer a wide range of goods in addition to food and drinks,

for instance utensils, clothes, camping equipment, and other similar goods (Figure 7.1).

7.3.1.2 Gift Shops

The presence of this service in motorway service areas is limited to a small number of service areas. One of the reasons behind this limitation is the amount and diversity of goods available in groceries in many service areas, which militates against the independent presence of specialized gift shops in many service areas.

7.3.1.3 Restaurant

Restaurants are the main dining facilities in the motorway service areas. In some service areas there exist other dining facilities such as cafeterias, which will be discussed later. Restaurants vary in their size, design, furniture, and quality of service and food offered. Variety of food in the service area restaurants is related to the background or nationality of the staff operating the restaurant (Figures 7.2).

7.3.1.4 Gahwahs

Gahwahs' role in MSAs is changing since those of the traditional and transitional periods mentioned earlier in chapters two and three.

In today's service areas, gahwahs' role is limited to the coffee-shop and traditional water-pipe service rather than the broader dining and rest functions that it has traditionally had.



Figure 7.1: Internal and External Views of Groceries.

This limitation of the gahwah's scope is primarily caused by the multiplication of facilities in today's service areas compared to the traditional gahwahs. This made gahwahs lose some of their functions to other catering services such as restaurants and cafeterias (Figure 7.3).

Moreover, service areas' gahwahs have lost some of their traditional appeal to many users because of the presence of other facilities in service areas and the influence of technology.

The spread of air-conditioning to gahwahs, for instance, meant the limitation of the out door environment on one hand and the limitation of air circulation on the other. With this indoor environment, gahwahs became dominated by a smoky atmosphere caused by the use of water-pipes (Figure 7.4).

Other changes in many of today's gahwahs involve furniture, where traditional objects such as the famous high chairs were replaced by uncomfortable steel ones. Moreover, many non smoker travellers avoided gahwahs because of the passive smoking atmosphere.

7.3.1.5 Cafeterias

Cafeterias in the motorway service areas are dining facilities specialising in fast food, mostly sandwiches, and freshly squeezed juices, as well as hot and cold drinks. Cafeterias are usually small in size with limited number of seats and tea tables. Their services are used by travellers at different times of the day, and outside restaurants' working hours (Figure 7.5).



Figure 7.2:
Internal and External Views of Restaurants.



Figure 7.3:
Restaurant and Gahwah,
Side to Side in One of
the MSAs.



Figure 7.4:
Water-Pipes in One of
the Gahwahs.

7.3.1.6 Families Dining Facilities

Families dining facilities in motorway service areas are influenced by the Islamic teachings which stress privacy for families. As a result, family dining facilities were shaped by this privacy concept and were either offered a private section of the restaurant (free of charge), or rooms adjacent to the restaurant for families dining, (free of charge, if not air-conditioned or with an hourly rental charge, 15-20 S.R if air-conditioned).

Beside the three previous facilities mentioned above, families can rent motel rooms with private baths, on an hourly basis as will be explained in section 7.3.1.7 below. However, in this case travellers will pay 25-30 S.R/Hr, a little more than the air-conditioned dining rooms mentioned earlier.

All the above types of family dining places had been found adopted in many service areas during the time the inventory was being carried out in the motorway service areas. So these four types of facilities were addressed together with their range of charges to the travelling families. The result was that the majority of travelling families, 65%, preferred motel rooms with their own private baths, 24% preferred air-conditioned dining rooms, while only 5% preferred non-air-conditioned rooms and another 5% were for private sections of the restaurant for family use.

7.3.1.7 Motels (Rented Accommodations)

Motel facilities are available in almost one third of the motorway service areas, however, the uniqueness of them lies in the flexibility of the rental system in which they operate. In this system, rooms are rented on an hourly basis, which coincides with the demand from many travellers and their travelling circumstances. This system also satisfies families' needs when stopping for their meals in the

convenience of motel rooms, especially during the heat at mid-day in summer (Figures 7.6).

In the questionnaire travellers were asked to respond to the issue of stopping for sleep at night, (after they were given an introductory statement putting them in picture). In addition they were given three places to choose from: sleeping inside or near their vehicles, sleeping in the nearest service area's motel, or to continue driving to the nearest city or town. A fourth choice was left open to the travellers to specify any other place not covered by the three mentioned above.

The largest group of responding travellers on this question, 50.5%, mentioned that they would stop to sleep inside or near their vehicles, The second largest group of travellers, 42.8%, mentioned that they would sleep in the nearest service area' motel. The third group, only 5.7% mentioned that they would continue to the nearest city. The last group, only 1% of responding travellers mentioned that they would use places other than the ones mentioned above.

The above mentioned percentages were for travellers in all travelling groups, both private and commercial.

Separating the two groups responses has shown that the majority of truck drivers (98.6%) preferred sleeping in or near their vehicles, and the majority of private travellers (62.9%) would use accommodation within the service areas. Moreover, when the private motorists group was further divided into families and non families, it showed that a higher percentage of families would use the service areas' sleeping accommodations, (75.9%, compared to only 57.6% for other private motorists).

Similarly, a smaller percentage of families mentioned that they would sleep in or near their vehicles compared to other private motorists.

7.3.1.8 Mosques

Mosques are available in many service areas, giving the travellers the ability to offer their five daily prayers in the tranquillity of an indoor environment. However, in some service areas the prayer areas are not totally indoors. In these service areas, prayer areas were found to be very simple structures, providing a roof to protect prayers from the elements of the environment. This demonstrates how a different interpretation can be made of the Ministry of Finance's ordinance mentioned earlier in section 7.2 of this chapter. The ordinance has no specific details for mosques in controlling their size or construction specification; the only requirement was: a carpeted mosque.

Nevertheless, in many service areas, reasonable and spacious mosques were built and their tall minarets were used successfully in some service areas as strong vertical elements to dramatize the MSAs skylines especially from a distance (Figure 7.7).

7.3.1.9 Drinking Water

This is an important service to many travellers, especially drivers of commercial vehicles because, many of the private motorists usually use bottled drinking water. In fact, in many service areas bottled water boxes are seen in high stacks near groceries because of the high consumption rate.

There are no rules regarding the provision of drinking water in motorway service areas except those mentioned earlier in section 7.2. These are in respect of the civil defence's ordinance for the provision of two drinking fountains in petrol stations. However from the low provision rate of this service, it seems that complying operators are acting more out of charity than duty (Figure 7.8).



Figure 7.5: Internal View of an MSA's Cafeteria.



Figure 7.6: Internal and External Views of an MSA's Motel.

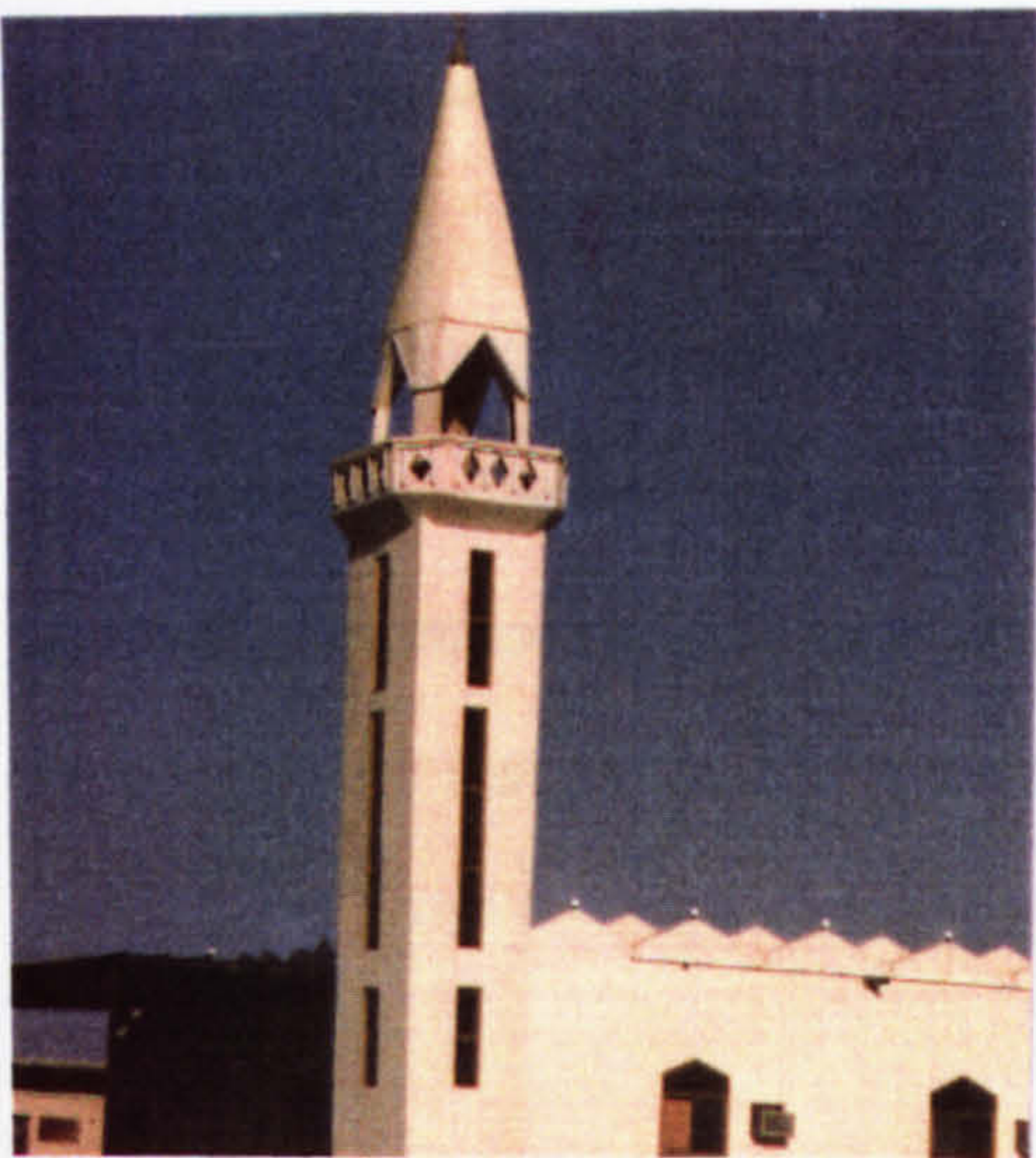


Figure 7.7: Minarets, Strong Vertical Elements in MSAs.

7.3.1.10 Ice Sale Service

The provision of ice is one of the important services in a country with a hot climate like Saudi Arabia. Ice is generally used by travellers and particularly by commercial truck drivers to chill water and other drinks as well as keeping food fresh. The negative aspects of this service are usually related to the physical facets of provision, such as the location of this service in relation to other services. The service usually stands alone and is separated from groceries or shops to which it is supposed to be attached. Another physical aspect is the quality of the ice-containers as structures. In many cases they are not pleasant sights, especially with poor decor and signing (Figure 7.9).

7.3.1.11 Children's Play Facilities

Children's play facilities are among the least available of the travellers' services in the motorway service areas, and even in the few service areas where they are provided, they are poorly located and equipped.

7.3.1.12 Picnic Areas

Picnic areas are also limited in their availability in the service areas, and even in the limited number of MSAs where they are found, they had many shortcomings. Among the major shortcomings are the lack of shade and the poor location in respect to the rest of the MSA's facilities (Figure 7.10).

7.3.1.13 Toilets

Toilets are usually provided in motorway service areas, however in some service areas there are no toilets available for travellers' use. In some of the service areas where toilets are provided there are no separate toilets for ladies. The number of W.C's provided for travellers vary from one service area to another, the maximum number of W.C's recorded in a single MSA was twenty two, and the minimum was a single W.C.(Figure 7.11).

7.3.2 Vehicles Facilities

Vehicle facilities are those facilities provided in the MSAs to keep vehicles moving. Comparing the number of these facilities to the travellers' services previously mentioned, it becomes clear that these services are limited in variety.

7.3.2.1 Fuel.

Fuel is considered one of the main services in the MSAs. In fact, the petrol stations which refuel both private and commercial vehicles are considered one of the major elements of the Saudi service areas.

In fact, the services provisions concept in the Kingdom dealt consciously or unconsciously with service areas and treated them as if they were mainly petrol stations with some additional facilities. A concept which had a negative impact on the outcome of services, as petrol stations became the dominant facility with other provisions seen as an added extra (Figure 7.12).



Figure 7.8: Drinking Water Coolers in a MSA.



Figure 7.9: Ice Container in a MSA.

**Figure 7.10:
One of the Few Picnic
Areas in MSAs.**



Figure 7.11: An Internal View of an MSA's Toilet.

7.3.2.2 Oil and Tyres

Oil and tyre services are also two of the main vehicle services available in the motorway service areas. These two services, oil and tyres are always found together sharing the same building, in service areas as well as in urban locations. The major shortcoming of these facilities lies in the architecture quality of the buildings where they are located. In some MSAs these services are located in proper and well organized buildings, however, in many other cases their buildings are below the standards of the remaining facilities (Figure 7.13).

7.3.2.3 Vehicles Maintenance

This service is not very frequently found in the motorway service areas. In the MSAs where this service was found, garages had limited equipment and few spare parts. This limited their main contribution to mending failures which did not require spare parts. If spare parts were required and were not available in the service area (which was usually the case), the vehicle owner had a choice of, whether to fetch the parts needed or to send the vehicle to the nearest major city.

7.3.2.4 Car Wash

Car wash facilities are found in a limited number of service areas, however, they usually exist in service areas close to major urban locations. This clearly suggests that these facilities are targeted to the potential market of nearby urban locations, rather than the regular motorway users.

7.3.2.5 Vehicles Towing

Towing service is an important service in motorway service areas, because it is the only way to rescue broken-down vehicles. However, this service was only found in a few service areas. In these service areas recovery trucks operate independently or as part of the garage services (Figure 7.14). Because of this limitation in recovery service within service areas, many recovery missions come from the major urban centres nearest to the broken down vehicle.

In either case, because of the limitation of vehicles service and spare parts availability, broken down vehicles are usually sent to urban garages rather than those in the service areas.

7.3.2.6 Spare Parts

The sale of spare parts is limited to a few motorway service areas, and even in these service areas many spare parts are not available due to the diversity of makes and models. Most of the available spare parts are for popular makes of vehicles or parts which fit most vehicles, such as batteries, belts, hoses, bolts, nuts etc.

7.4 Facilities' Levels of Availability in The MSAs

As was clear from the previous discussion, there are many services available in the service areas along the four motorways in the Kingdom. This section will concentrate on the availability levels of the different facilities mentioned earlier. These facilities will also be divided into the two main categories used earlier, which are:

- (1) Services Aimed at Travellers Themselves.
- (2) Services Aimed at Their Vehicles.



Figure 7.12: Fuel Service in MSAs.



Figure 7.13: Oil and Tire Service in One of the MSAs.



Figure 7.14: Towing Vehicles in One of the MSAs.

7.4.1 Travellers Services

As shown in (Figure 7.15), the services most widely available for travellers are groceries, toilets for men , and restaurants. Recorded occurrences were ranging from 85% to 81% of the 125 service areas available on the Kingdom motorways.

Mosques (prayer areas) and gahwahs followed with a slightly lower occurrence rate, 71% and 70% of the service areas respectively.

A third group of services followed, but with a far smaller rate of occurrence compared to the previous groups. Occurrence of facilities in this group ranged between 34% and 26% of the service areas and includes toilets for ladies, rented accommodation, and family dining rooms.

Toilets for ladies' use, as clear from the above rate of availability, has a lower percentage of availability compared to the provision for men which has been mentioned earlier. Although they differed in availability, it is interesting to mention that both kinds of toilets were demanded in the same governmental document.

The fourth and last group of facilities has a wide ranging occurrence rate, where availability ranges from 11% to as low as 1.6% of the motorway service areas. In descending order, these facilities are: ice selling, drinking water, ladies prayer rooms, cafeterias, gift shops, children's play areas, and picnic areas.

7.4.2 Vehicle Services

As shown in (Figure 7.16), there is a wide range in the occurrence rate of services available for vehicles; ranging from 89% of the 125 services on the four motorways providing fuel, 76% offering an oil and tyre service, and only 21% offering a vehicle maintenance service.

FIGURE 7.15: THE AVAILABILITY OF TRAVELLERS' SERVICES.

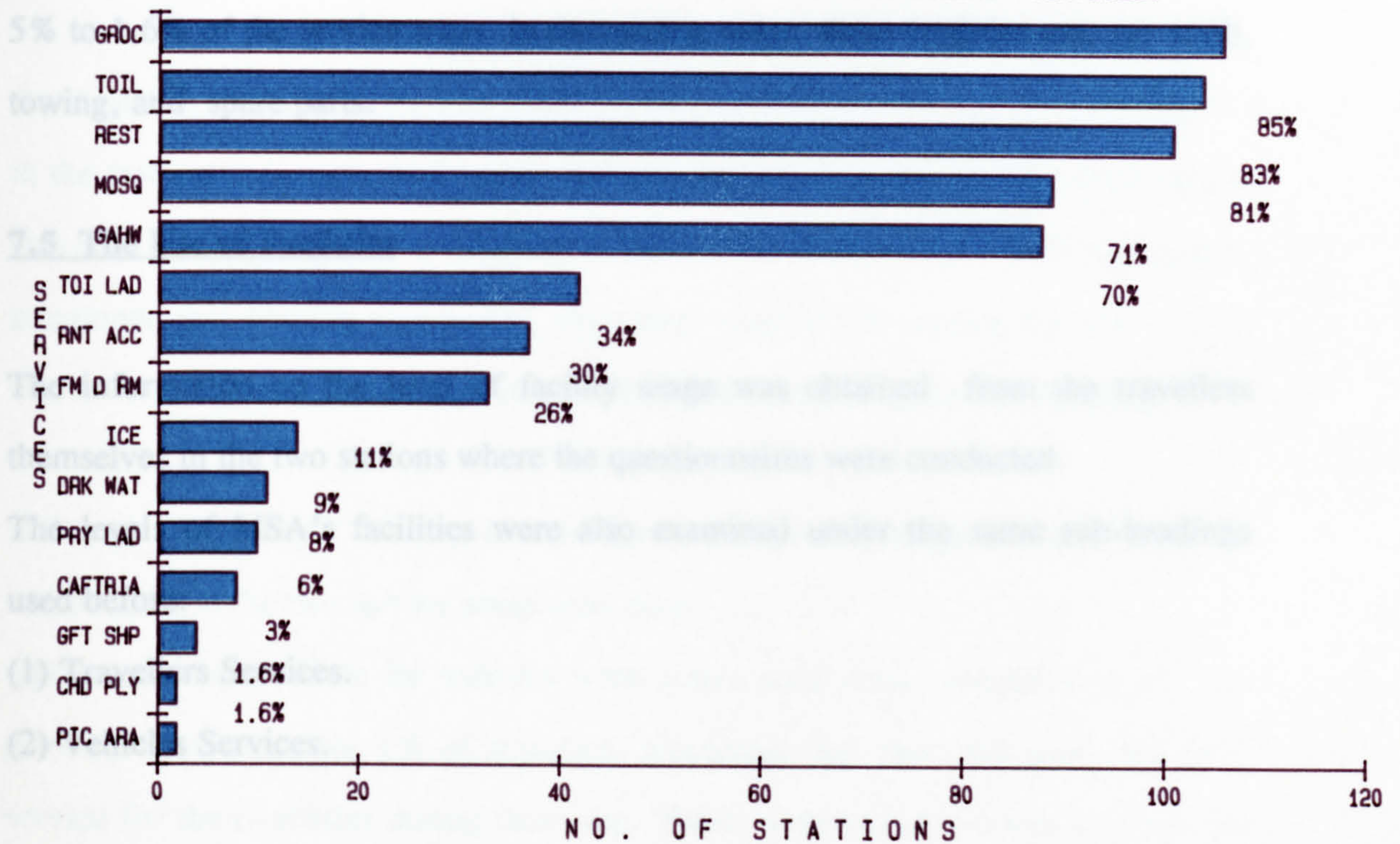
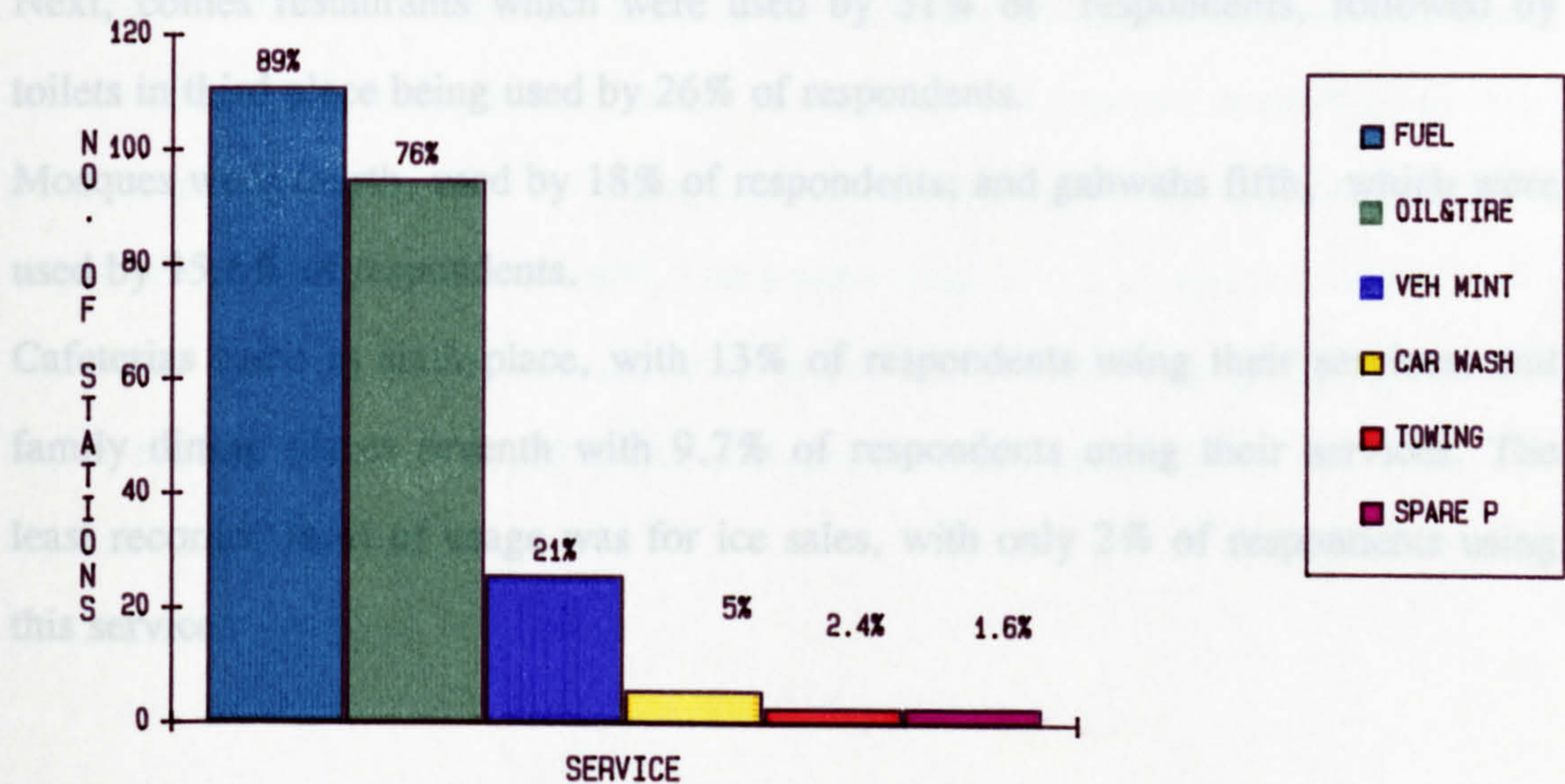


FIGURE 7.16: THE AVAILABILITY OF VEHICLES' SERVICES.



The three remaining facilities have a rather low rate of occurrence, ranging between 5% to 1.6% of the service areas. In descending order, these facilities are: car wash, towing, and spare parts.

7.5 The Use of Facilities

The information on the level of facility usage was obtained from the travellers themselves in the two stations where the questionnaires were conducted.

The levels of MSA's facilities were also examined under the same sub-headings used before:

- (1) Travellers Services.
- (2) Vehicles Services.

7.5.1 Travellers Services Usage Levels

As shown in (Figure 7.17), groceries are top of the list for the degree of usage. Their services being used by 47% of the 300 respondents in both stations.

Next, comes restaurants which were used by 31% of respondents, followed by toilets in third place being used by 26% of respondents.

Mosques were fourth, used by 18% of respondents; and gahwahs fifth, which were used by 15.6% of respondents.

Cafeterias came in sixth place, with 13% of respondents using their services; and family dining places seventh with 9.7% of respondents using their services. The least recorded level of usage was for ice sales, with only 2% of respondents using this service.

7.5.2 The Vehicles Services Usage levels

As shown in (Figure 7.18), fuel selling is the main motor vehicle service obtained in the two service areas. 81% of the 300 respondents used this facility. Fuel service was also the main reason for stopping in the service areas: as 62.3% of respondents mentioned that fuelling was among their main reasons for making the stop, which represented a greater percentage compared to other reasons given for stopping.

Although oil and tyre services fell second in the level of usage, only 19% of the respondents in the two service areas used them.

Other services available for vehicles were rarely used when compared to the two previous services: only 4% of travellers mentioned that they had used any other service for their vehicles during their stop. These, automotive services however did not include towing or vehicle maintenance.

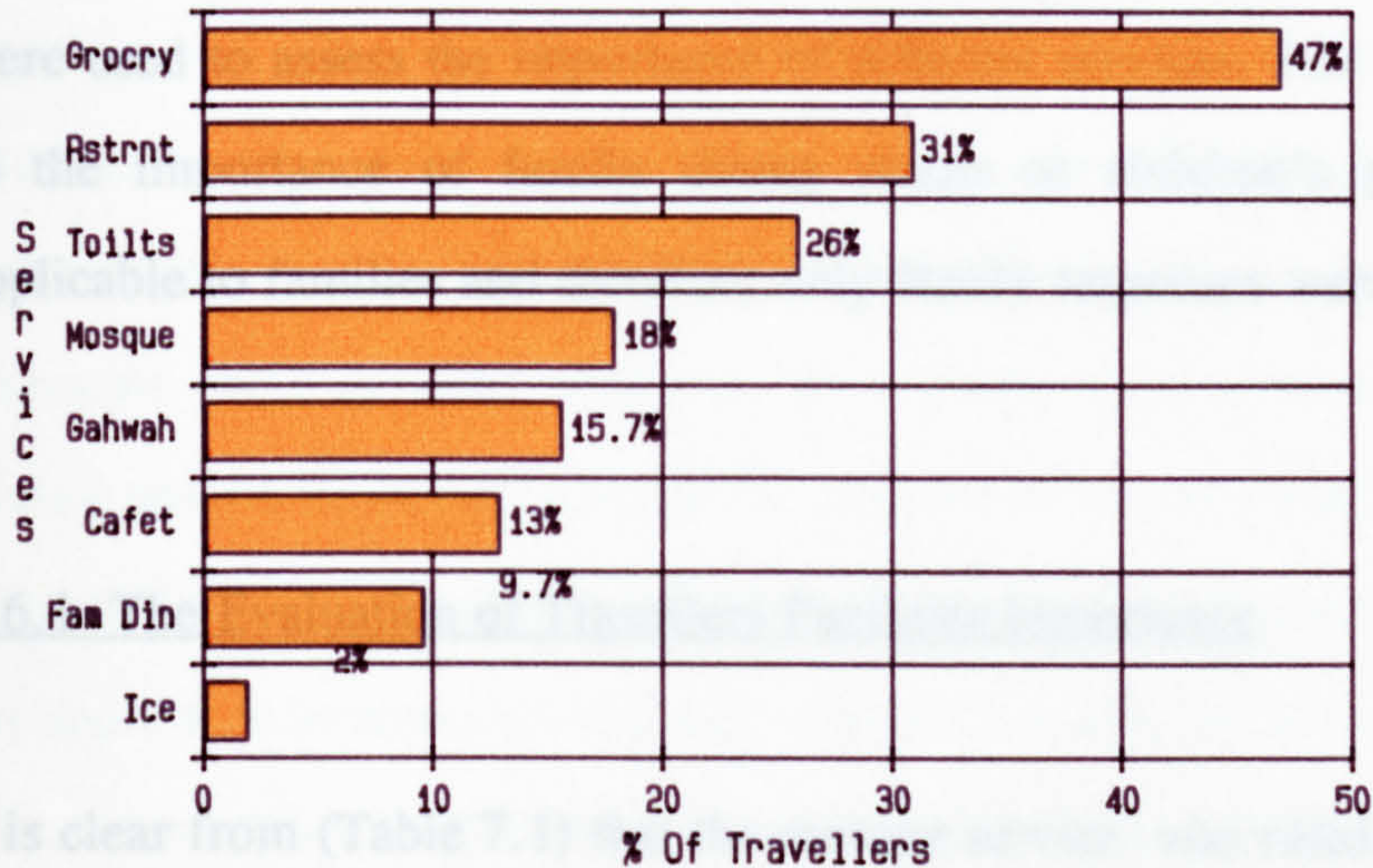
7.6 The Importance of Facilities Availability to The Motorway Users.

To test the travellers' attitudes towards the different services along the motorway service areas, respondents were asked to rank all the services according to their priority and their necessity for being included in the motorway service areas. The respondents' attitudes were recorded on a scale from 1 to 5 in which 1 was the least important service and 5 was the most important service. The grouping as used before has also been employed in this analysis; the services were:

- (1) Travellers Facilities.
- (2) Vehicle Facilities.

Before discussing the importance of the different services to the motoring sector, it should be emphasised that the level of a service's importance was based on the actual number of travellers who responded to the question on that service or facility. Not applicable responses to a service facility as well as "missing data" were excluded as they would affect the results, as the other results only valid cases were used.

Figure 7.17: Traveller Services' Usage Levels.



It is clear from (Table 7.1) that the most important service to travellers who responded to the question on the services was the most important to travellers who responded to the question on the services. 84% of responding travellers gave it a score of 5 and a further 15.5% gave it a score of 4.

Groceries, came second with 73.7% of respondents giving them a score of 5 and another 26.3% giving them a score of 4.

Figure 7.18: Vehicle Services Used by Travellers.

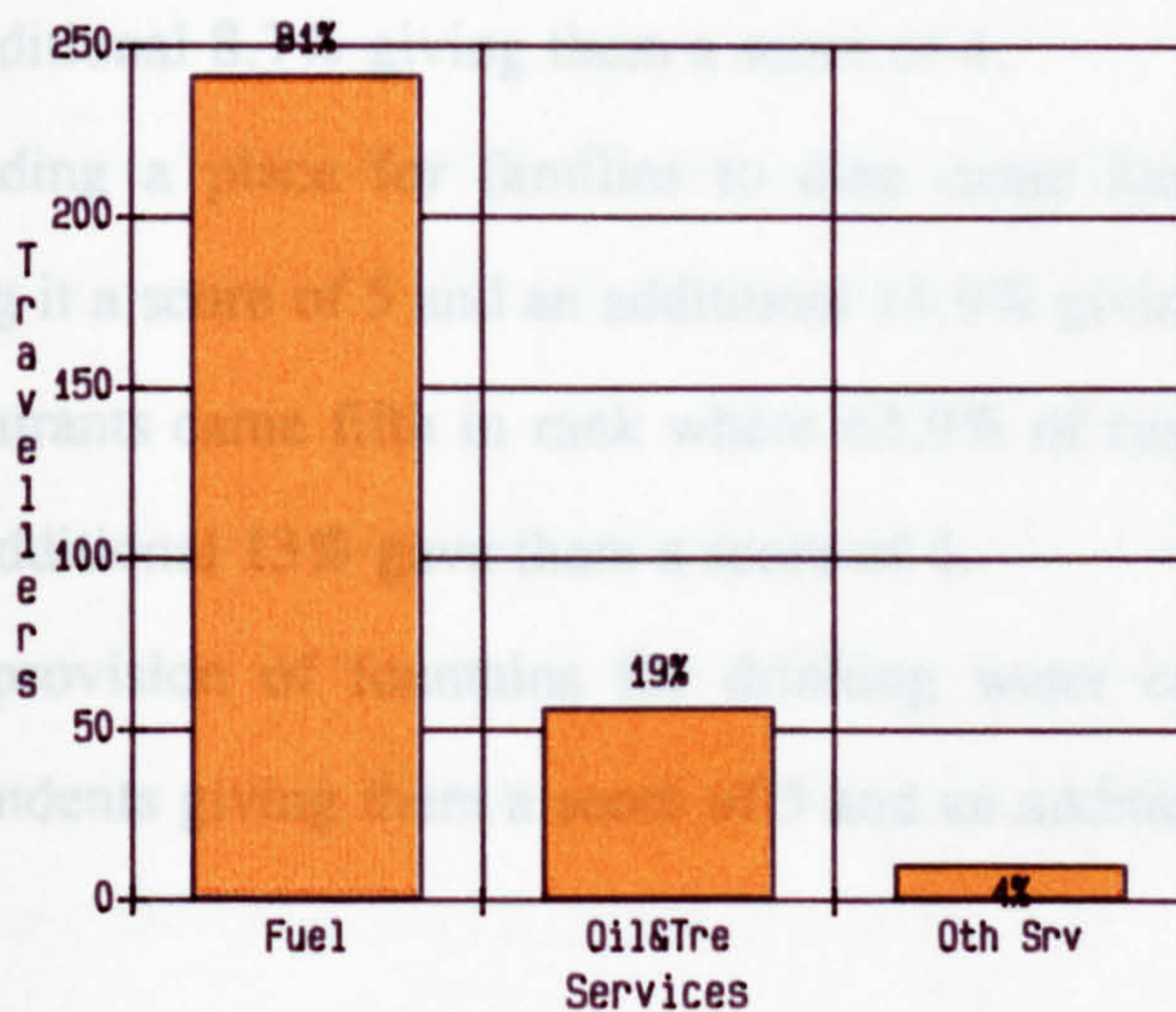
Toilets were ranked third with 78.3% of respondents giving them a score of 5 and an additional 21.7% giving them a score of 4.

Providing a place for travellers to sleep was ranked fourth with 73.5% of respondents giving a score of 5 and an additional 26.5% giving it a score of 4.

Restaurants came fifth with a rank where 63.9% of respondents give them a score of 5 and an additional 36.1% giving them a score of 4.

The provision of drinking water came in sixth where 63.1% of respondents gave it a score of 5 and an additional 36.9% giving them a score of 4.

The sale of ice was ranked seventh where 41.8% of respondents giving it a score of 5 and an additional 58.2% giving it a score of 4.



Before discussing the importance of the different services to the motorway users, it should be emphasised that the level of a service's importance was based on the actual number of travellers who responded to the question on that service or facility. "Not applicable" responses to a certain facility as well as "missing data" were excluded as they would effect the results; or in other words only valid cases were used to assess the importance of different services. For example, the response to the importance of family dining places or children's play areas were only applicable to families and therefore only family responses were considered.

7.6.1 The Evaluation of Travellers Facilities Importance

It is clear from (Table 7.1) that the mosque service was rated the most important to travellers who responded to the question on this service: 86% of responding travellers gave it a score of 5 and a further 8.9% gave it a score of 4.

Groceries, came second with 78.9% of respondents giving them a score of 5 and another 12.1% giving them a score of 4.

Toilets were ranked third with 78.3% of respondents giving them a score of 5 and an additional 8.7% giving them a score of 4.

Providing a place for families to dine came fourth with 75.5% of respondents giving it a score of 5 and an additional 14.9% giving it a score of 4.

Restaurants came fifth in rank where 63.9% of respondents gave them a score of 5 and additional 13% gave them a score of 4.

The provision of fountains for drinking water came in sixth where 63.1% of respondents giving them a score of 5 and an additional 7.7% giving them a score of 4.

The sale of ice was ranked seventh where 41.8% of respondents giving it a score of 5 and an additional 15.5% giving it a score of 4.

Motels' service came eighth with 35.2% of respondents giving it a score of 5 and another 13.4% giving it a score of 4.

Cafeterias' service, were rated ninth with 29.9% of respondents giving it a score of 5 and additional 18.5% giving it a score of 4.

Picnic areas came tenth, with 26.2% of respondents giving it a score of 5 and an additional 21.1% giving it a score of 4.

Children's play areas were rated eleventh, with only 24.2% giving it a score of 5 and an additional 14.7% giving it a score of 4.

Gahwahs came in 12th, with only 24% giving them a score of 5 and only 8.4% giving them a score of 4. Moreover, there is an obvious change in the mode or the general direction of opinion for gahwahs, the mode has changed from a score of 5 (as applicable to above mentioned services) to a score of 3.

The same applies to gift shops where the mode among attitudes was for a score of only 2 (being given to 39.7% of respondents). Gift shops were ranked the least where only 8.4% of respondents gave it a score of 5 and only 10.1% gave it a score of 4.

7.6.2 The Evaluation of the Importance of Vehicle Facilities.

As is clear from (Table 7.2), fuel service has the highest percentage of respondents giving it a score of 5: 93.3% of respondents, thus ranking first among other vehicle services.

Next in Importance came oil and tyre services with 75.6% of respondent giving it a score of 5 and an additional 11.7% giving it a score of 4.

Ranked third was vehicle maintenance with 55.5% of respondents giving it a score of 5 and additional 15.7% giving it a score of 4.

In fourth place came the towing service with 51.8% of respondents giving it a score of 5 and an additional 15.1% giving it a score of 4.

The service offering spare parts was rated fifth with 46.8% of respondents giving it a score of 5 and an additional 17.1% giving it score 4.

In sixth and last place came the car wash service. However there is a clear change here in the mode from a score of 5 (as applicable to the above mentioned vehicle services) to a score of only 2. In this case only 10.4% of respondents gave this service a score of 5 and only 12.1% gave it a score of 4.

7.7 Additional Facilities Required by Travellers

In the questionnaire, travellers were asked about any additional services that they would like to see in the Kingdom's MSAs. The question was an open ended one, giving the travellers the freedom to respond with any answer.

The aim of this question, however, was to obtain information from travellers who wanted to express a demand for a service which they felt there was a great need for. Although limited response rate was recorded here, it should be valued because it came without prompting.

The travellers' demand for facilities here can be divided into three distinctive groups. In the first group the demand was for facilities which were already available in some MSAs but which travellers perhaps wanted to see more of, while the demand in the second group was for providing some facilities which were not available in the MSAs. In the third group, the demand was for improving some of the existing MSA's facilities. The details of these three groups will be discussed in the following sections.

7.7.1 Available Services Demanded By Travellers

(Figure 7.19) shows the percentage of facilities which were found in some of the Kingdom's MSAs and still requested by travellers.

Service	Valid Cases	Mode	Median	Score %				
				1	2	3	4	5
Mosque	271	5	5	1.5	0.4	3.3	8.9	86.0
Grocery	298	5	5	0.7	1.7	6.7	12.1	78.9
Toilets	299	5	5	1.7	5.4	6.0	8.7	78.3
Families Dining	58	5	5	4.3	2.1	3.2	14.9	75.5
Restaurant	299	5	3	2.7	4.3	16.1	13	63.9
Drinking Fount.	298	5	5	7.4	7.7	14.1	7.7	63.1
Ice	297	5	4	16.2	10.8	15.8	15.5	41.8
Motel	298	5	3	17.1	16.1	18.1	13.4	35.2
Cafeteria	297	5	3	16.5	15.1	19.8	18.5	29.9
Picnic Area	298	5	3	13.1	17.1	22.5	21.1	26.2
Childrens Play	59	5	3	21.1	21.1	18.9	14.7	24.2
Gahwah	296	3	3	23	18.6	26.0	8.4	24.0
Gift Shop	297	2	2	24.9	39.7	16.8	10.1	8.4

Table 7.1:
The Importance of the Availability of Travellers' Facilities.

Service	Valid cases	Mode	Median	Score %				
Fuel	299	5	5	0	0.7	5.0	1.0	93.3
Oil & tire	299	5	5	2.7	2.7	7.4	11.7	75.6
Vehicles Maint.	299	5	5	7.4	9.0	12.4	15.7	55.5
Towing	299	5	5	6.0	8.4	18.7	15.1	51.8
Spare parts	299	5	5	6.7	9.3	20.1	17.1	46.8
Car wash	297	2	2	28	33.7	15.8	12.1	10.4

Table 7.2:
The Importance of the Availability of Vehicles' Facilities.

As it is clear from (Figure 7.19), spare parts had the highest percentage of demand, with 7% of the 300 travellers interviewed asking for this service.

Vehicles maintenance came second, with 5% of travellers requesting this service.

Motels, cafeterias, and children's play areas followed in the degree of demand and had the same percentage of travellers requiring their service, 4.6% .

Fourth, came the request for family dining facilities, vehicles towing, and picnic areas with 3% of travellers demanding their services.

The least demand was for drinking fountains, which were requested by only 1.3% of travellers.

7.7.2 Unavailable Services Demanded by Travellers

Among all the services required by travellers, whether available in MSAs or not, was the provision of public telephones which had the greatest demand by respondents: 21% of respondents interviewed demanded this facility to be provided in the motorway service areas.

The other demand by travellers was for vehicles to be checked while fuelling: 4.6% of travellers demanded this service. The demand for this service by travellers is perhaps related to its availability in many urban petrol stations, as a result of increased competition between the different operators to attract motorists.

7.7.3 Services Improvements Demanded By Travellers

In addition to the available and unavailable services demanded by travellers, many travellers voiced demands for the improvement of some services already available in many MSAs.

As shown in (Figure 7.20), 6% of travellers asked for better landscaping and improved plant material design in the motorway service areas. 3% of travellers asked for the improvement of dining facilities, and another 2% asked for better toilets in the motorway service areas.

7.8 Facilities' Design Implications

From the previous discussion, it is clear that while some facilities were used more or were thought of as more important by the travellers, that did not mean that other services should be abandoned. On the contrary, more services should be encouraged in the motorway service areas. However, from the design point of view, that means facilities' sizes and locations should be related to their level of usage and degree of need in the MSAs.

On the travellers' side, that means services like mosques, groceries, toilets, and restaurants should be predominant facilities. On the vehicles' side, fuel, oil and tyre services should also be predominant.

In addition to stressing the predominance of the above facilities, the data presented in earlier sections suggested that other services should have an obvious presence in the motorway service areas. These services include a pleasant landscape and planting design in the MSAs and the provision of telephones. In fact improving the quality of the landscape and planting design, and the provision of telephones were two of the main requirements suggested by the travellers interviewed in the MSAs.

As explained earlier, public telephones are not available at the moment in any of the MSAs although they were among the predominant features of other countries service areas (Figures 7.21, 7.22). Moreover, the landscape architecture and planting design in the MSAs will be examined in detail in the following chapter.

FIGURE 7.19: AVAILABLE FACILITIES DEMANDED BY TRAVELLERS.

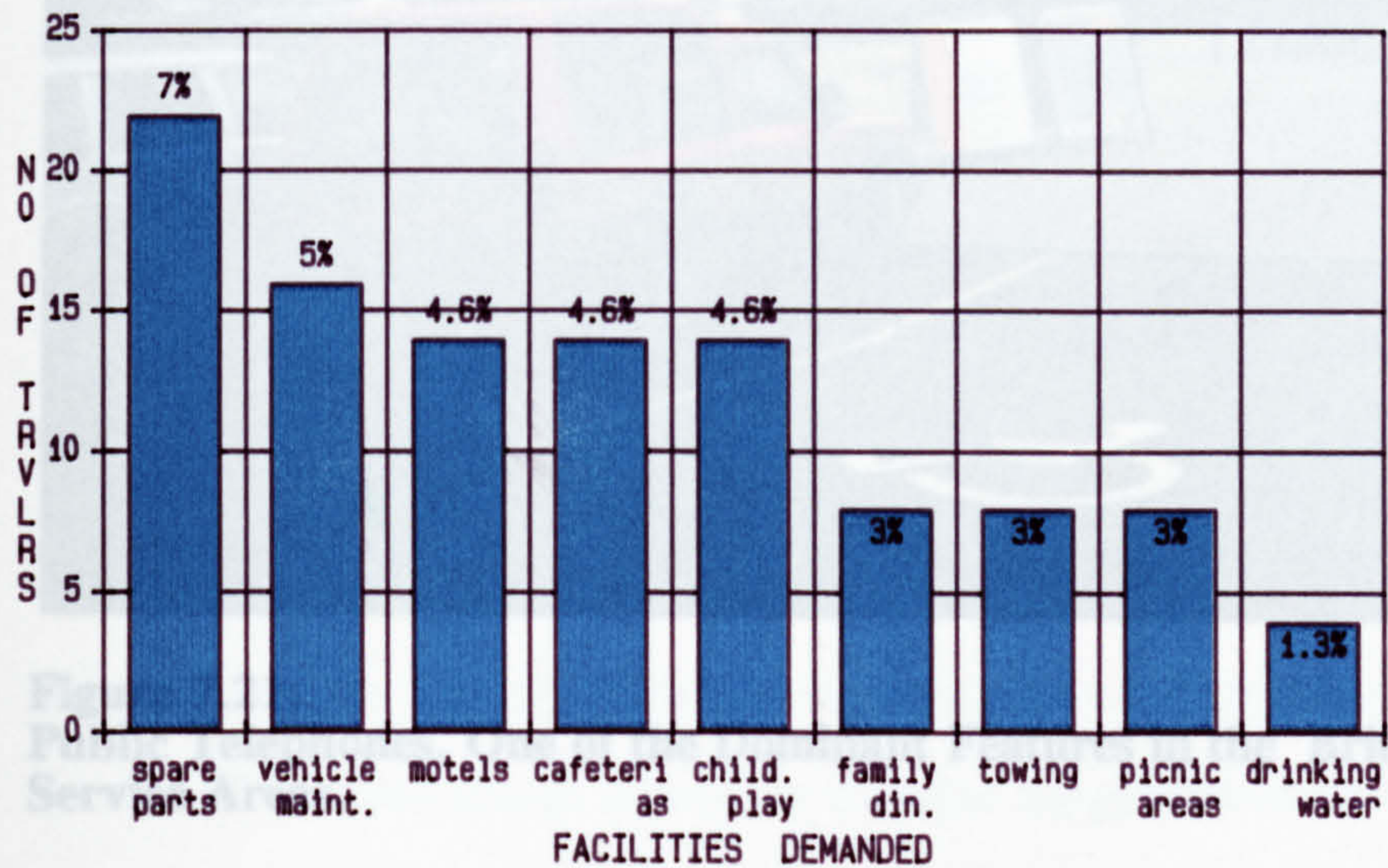


FIGURE 7.20: SERVICES' IMPROVEMENTS DEMANDED BY TRAVELLERS.

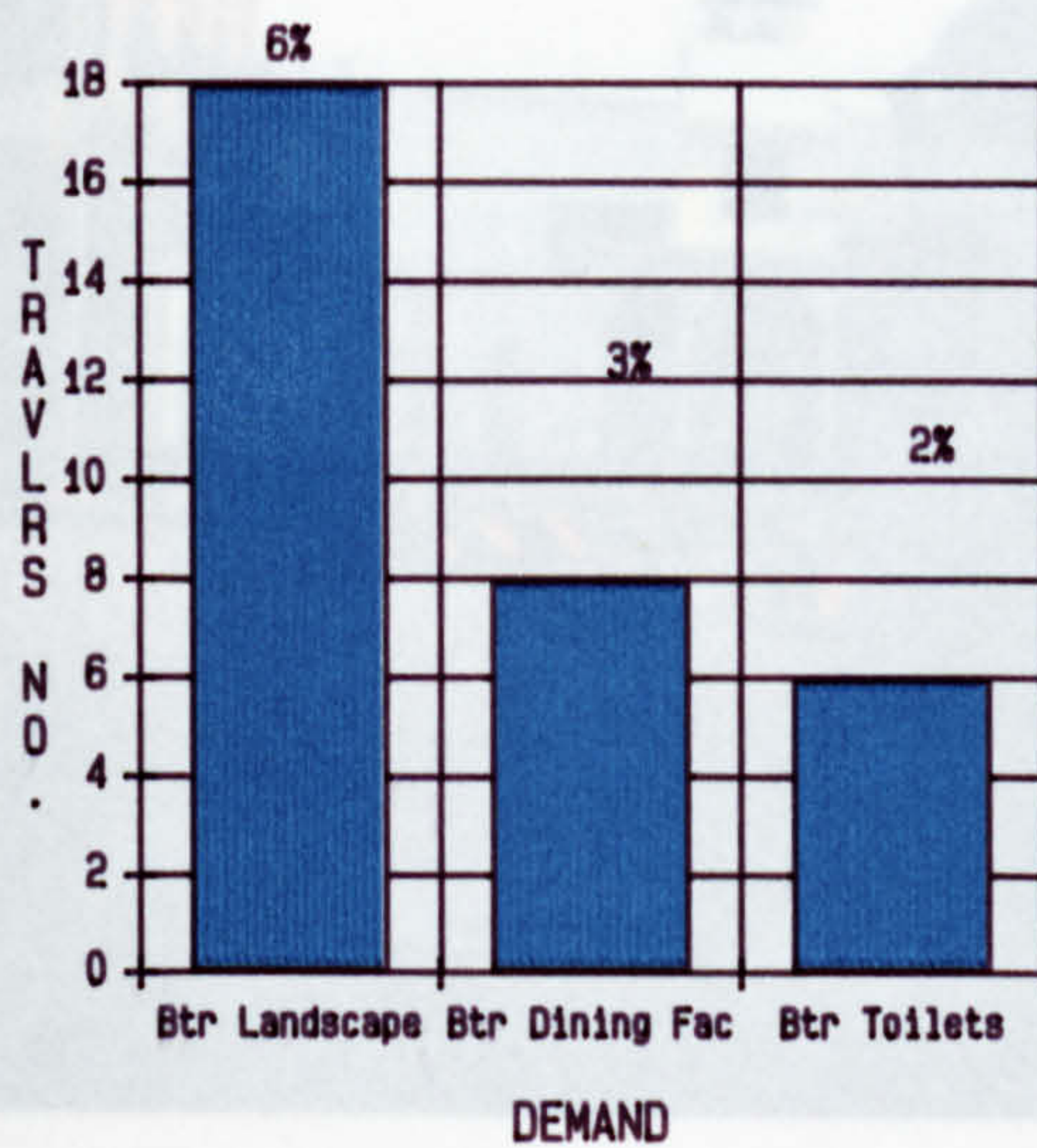


Figure 7.22:
A public Telephone in an Urban Petrol Station, A service Which is Lacking in the Motorway Service Areas.



Figure 7.21:
Public Telephones, One of the Dominant Features in the British Service Areas.



Figure 7.22:
A public Telephone in an Urban Petrol Station, A service Which is Lacking in the Motorway Service Areas.

7.8.1 Relationship Between Facilities

From the previous discussion of the nature of the facilities available in the motorway service areas, it was clear that there were two distinctive groups of services in the motorway service areas. One for the travellers and another for their vehicles. Looking at the facilities under each group shows no direct relationship between the facilities of the two groups. Yet, some facilities are indirectly related within the two groups due to the pattern of usage by travellers. For instance, the oil and tyres service although a vehicle oriented one, it has an indirect relation to the traveller services. The relationship has to do with the travellers' behaviour, as many motorists usually leave their vehicles for oil or tyre service while they enjoy a relaxing time in one of the dining facilities. Another relationship between the two groups of services is also caused by traveller usage pattern of facilities. This takes place when a traveller stops mainly to obtain fuel (or other automotive service) and wants to use a shop or a toilet while in the petrol station. The relationship between the traveller and vehicle services occurs if the shops and toilets were to be repeated on a limited basis near fuelling areas (as is the case in British MSAs). The provision of drinking water and ice sale, can also be grouped together with the above facilities, which would mean better organization of facilities and better layout in the individual service areas.

Although the two groups -of travellers' and vehicles' services- can be separated, with the consideration of the above mentioned comments, the individual services in each group are found to have strong relationships, although of different levels of strength. (Tables 7.3, and 7.4) show the degree of relationships between the traveller oriented services as one group and the vehicle oriented services as another. For example, on the travellers' side of services, catering facilities have very strong relations as they have many characteristics in common. Therefore, they can share

supply lines, and perhaps some other facilities such as cold stores and kitchens. They differ in terms of the nature of each, as explained earlier in this chapter.

Restaurants, for example, are larger and receive most of the public and therefore should be better located and have better views. Cafeterias are smaller and usually open for longer hours and therefore should be closer to the parking area to allow the closure of some parts of the service areas when the restaurants are not operating. Gahwahs are used more by truck drivers and non family groups, therefore it will be more functional if it has some orientation towards truck parking. Motels are used by families as a convenient place for relaxing and dining and therefore should be close to restaurants, (the same applying to other family dining facilities if available).

Mosques, are not related to the dining facilities, however they are very strongly related to the toilets, because of the ablution required prior to offering prayers. Thus mosques can be separated somewhat from other traveller services, provided they have their own toilets.

Children's play facilities are very much related to the family dining facilities, as families can observe their children playing while inside their dining place (Figure 7.23).

Groceries are not very much related to the dining facilities, but has a strong relationship with gift shops if they were available. Moreover, if vehicle' services were to be separated from traveller' services as mentioned earlier, then a small shop should be provided in the petrol station to serve travellers who want to proceed directly to the fuelling and other automotive services.

The above examples show how the nature of the different services could be accommodated to reach more homogeneous designs in the Kingdom MSAs, both (Tables 7.3, 7.4) give the levels of relationships between the different facilities which can be implemented in future designs.



Figure 7.23:
Children's Play Area successfully Located Beside Dining Area in
One of the British Service Areas, Allowing Visual Contact Between
Parents and Their Children.

Service	G R O C R Y	G F T	R E S T R N	G A H W A H	C A F E T E	F A M	M O T E L	M O S Q U E	D R N K	I C E	C H L D	P I C A R
Grocery		S H										
Gift Shop	S											
Restaurant	M	M										
Gahwah	M	M	S									
Cafeteria	M	M	S	M								
Family Din	M	M	S	W	M							
Motel	M	W	S	W	M	M						
Mosque	W	W	M	M	M	M	M					
Drink. W.	W	W	M	M	M	W	W	M	W			
Ice Sales	S	W	W	W	W	W	W	W	S			
Child. Ply	W	W	S	W	M	S	M	W	M	W	P	
Picnic A.	W	M	S	W	M	S	M	W	M	W	S	
Toilets	M	M	S	S	S	S	W	S	W	W	M	M

Table 7.3:
Relationships Between Traveller' Services in Motorway Service
Areas.

Service	F U E L	O I L & T I R E	V E H M A I N T	C A R W A S H	V E H T O W
Fuel					
Oil & Tyr.	M				
Veh. Maint	W	M			
Car Wash	W	M	W		
Veh. Tow.	W	W	S	W	
Spare Prts	W	S	S	W	M

Degree of Relationship	
S	Strong
M	Moderate
W	Weak

Table 7.4:
Relationships Between Vehicle' Services in
Motorway Service Areas.

In addition, (Figure 7.24) was developed taking in consideration some of these relationships to aid further in establishing a conceptual design standard. Although the next chapter will definitely show that this standard is totally different from the actual designs which has been implemented in the Kingdom motorway service areas.

7.9 Conclusion

From the previous discussion of the different variables related to facilities available in MSAs, it is clear that there are different levels of availability varying from one facility to another. Services such as fuel, groceries, toilets, restaurants, oil and tyre service, mosques, and gahwahs were found to have an overall high rate of availability, although individually they had varying rates within the group itself. The same applies to the next group of services; these are: motels, family dining rooms, and vehicles maintenance which were found to have an overall moderate rate of availability. The remaining services were rated low in terms of their availability and they made up the largest group of facilities, which included ice sales, drinking fountains, cafeterias, car washes, gift shops, towing service, spare parts, children's play areas, and picnic areas.

Looking at these results of the existing facilities it is clear that government codes for facility provision has not proved to be the ultimate factor for determining the availability of services in motorway service areas. For example, although required by the government ordinance for MSA's facilities, toilet provision was found to have a lower percentage of availability than a non required service such as grocery. Moreover, in the same ordinance clause, toilets were demanded to be provided for ladies and men, however field results showed an uneven provision for the two types of facility.

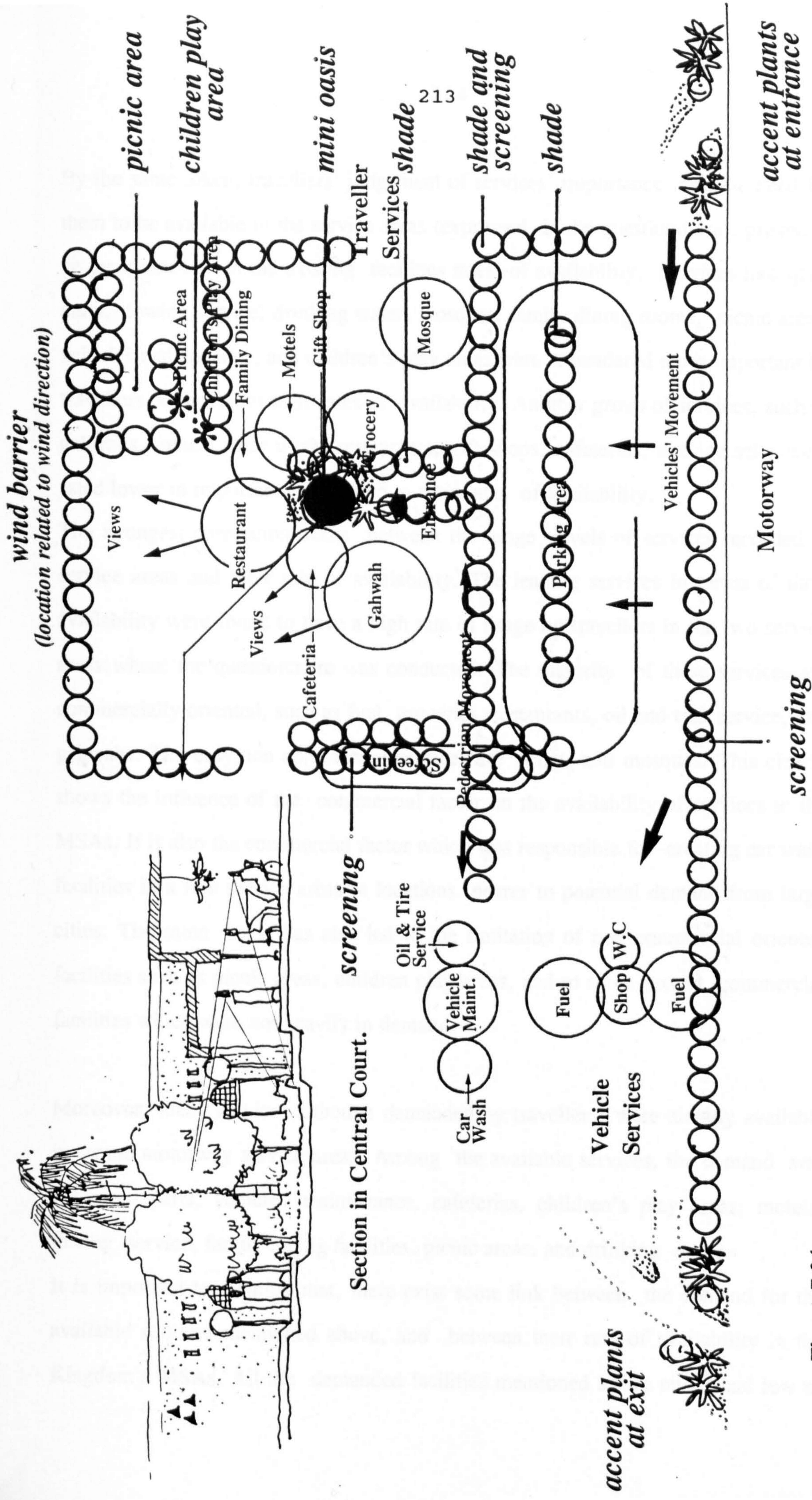


Figure 7.24:
Relationships Between the Different Services in Motorway Service Areas.

*Conceptual distribution of plant materials
in motorway service areas.*

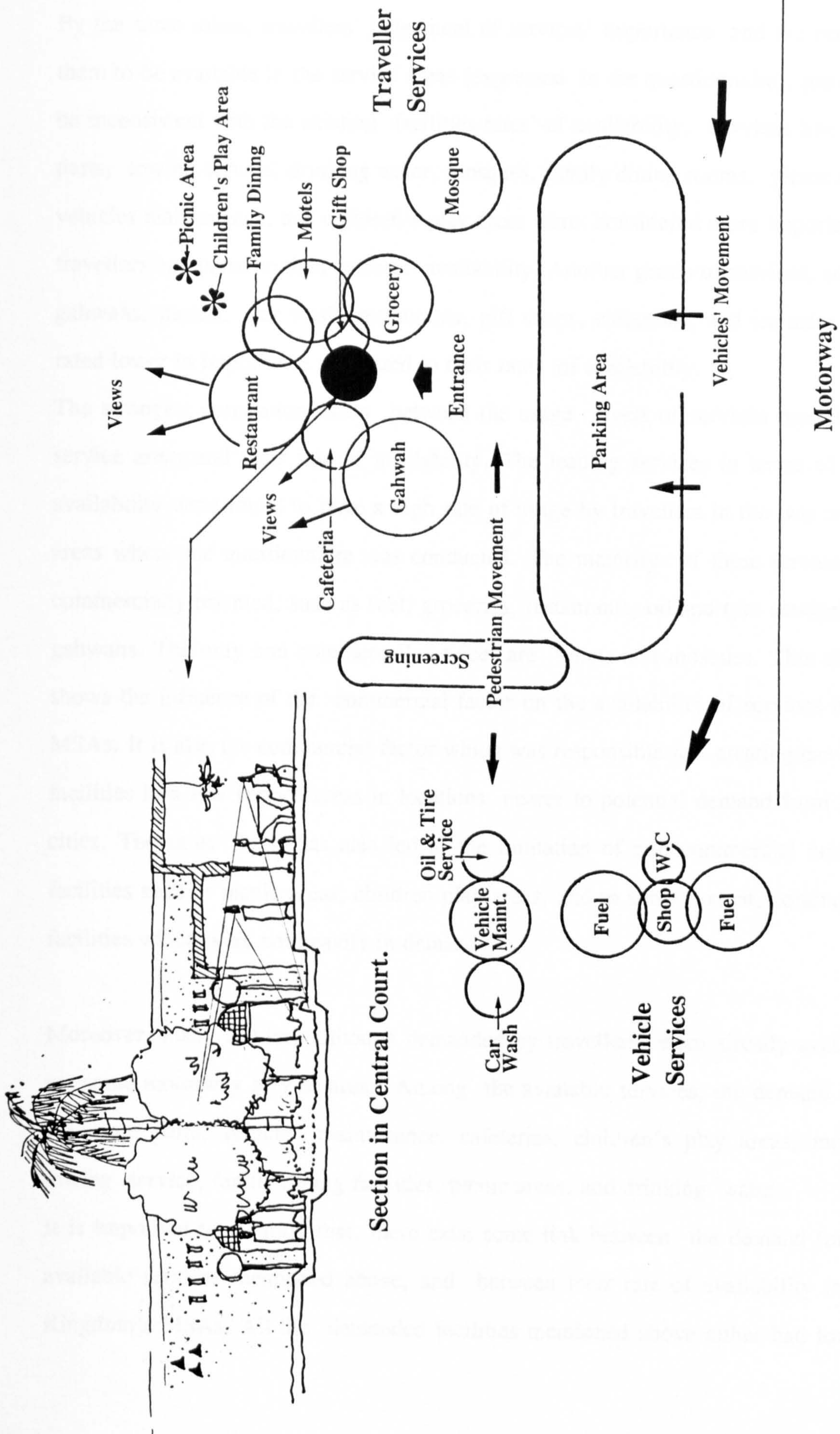


Figure 7.24: Relationships Between the Different Services in Motorway Service Areas.

By the same token, travellers' judgement of services' importance and the need for them to be available in the service areas (expressed in the questionnaire), proved to be inconsistent with the existing facilities rates' of availability. Services like spare parts, towing service, drinking water, mosques, family dining rooms, picnic areas, vehicles maintenance, and children's play areas were considered more important by travellers compared to their rates of availability. Another group of services, such as gahwahs, motels, car wash, restaurants, gift shops, cafeterias, and ice sales were rated lower in importance compared to their rates of availability.

The strongest correlation exists between the usage levels of services recorded in service areas and their rate of availability. The leading services in terms of their availability were found to have a high rate of usage by travellers in the two service areas where the questionnaire was conducted. The majority of these services are commercially oriented, such as fuel, groceries, restaurants, oil and tyre service, and gahwahs. The only non commercial services are toilets and mosques. This clearly shows the influence of the commercial factor on the availability of services in the MSAs. It is also the commercial factor which was responsible for creating car wash facilities in a few service areas in locations nearer to potential demand from large cities. The same logic has also led to the limitation of non commercial oriented facilities such as picnic areas, children play areas, and to some extent, commercial facilities which were not heavily in demand.

Moreover, many services although demanded by travellers were already available in some motorway service areas. Among the available services, the demand was for spare parts, vehicle maintenance, cafeterias, children's play areas, motels, towing service, family dining facilities, picnic areas, and drinking water.

It is important to mention that, there exist some link between the demand for the available services mentioned above, and between their rate of availability in the Kingdom's MSAs. All the demanded facilities mentioned above either had low or

moderate availability rates, and no facilities of high availability were demanded by travellers.

This means that services of low and moderate availability had more frequency of demand by travellers compared to those of high availability.

The above argument could also be stressed by travellers' demand for telephones. In fact, telephones were not available in any of the motorway service areas, however they were the most highly demanded single service by responding travellers.

Design Implications of Facilities in MSAs.

From a design point of view, it is very important that facilities' sizes and locations should be related to their level of usage and degree of need in the motorway service areas.

Looking at the nature of the different facilities shows that traveller and vehicle oriented services are not directly related. However, indirect linkages between some facilities from the two groups do exist. This linkage is related to travellers' usage patterns and not to the fact that there is an actual relationship between the facilities themselves.

The separation between the two groups of services (travellers and vehicles) is recommended for a better layout of service areas. However the steps mentioned in section 7.8.1 should be adopted to accommodate the different usage patterns from different travellers.

Moreover, as explained in the same section it is very important to understand the nature of the different facilities in the MSAs and the relationships between these services if successful designs are to be achieved.

Section 7.8.1 suggested a conceptual design based on the nature of the different facilities and the relationships between these facilities. In addition, this conceptual

design can be used as a tool to understand many of the existing layouts' shortcomings (which will be demonstrated in the following chapter). In the following chapter (Chapter 8) more emphasis will be put on the design and planning aspects of motorway service areas in the Kingdom including the layouts of services.

REFERENCES FOR CHAPTER SEVEN

- (1) The Case of the Week (1985), 'Roads Like Roses and Services Like Thorns', Al-Yamamah, Vol.862, 27 Sha'ban 1405 A.H., p 7.
- (2) Ministry of Interior, General Directorate of Civil Defence (1983), 'Safety Instructions for Gas Stations', p 47.
- (3) Ministry of Finance and National Economy, Government Properties Department, 'Rental Contract for Service Areas' Sites' 3 pages, p 1-3.

CHAPTER EIGHT

CHAPTER EIGHT

PLANNING, DESIGN AND UTILITIES OF MOTORWAY SERVICE AREAS

8.1 Distribution of Motorway Service Areas and Intervals Between them.

- 8.1.1 Distribution of Motorway Service Areas.**
- 8.1.2 Analysis of Intervals.**
- 8.1.3 Travellers' Attitudes Towards Intervals Between Motorway Service Areas.**
- 8.1.4 Conclusion.**

8.2 Services' Layout in the Motorway Service Areas.

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8.8 Overall Evaluation of Motorway Service Areas.

8.9 Summary.

CHAPTER EIGHT

PLANNING, DESIGN AND UTILITIES OF MOTORWAY SERVICE AREAS

This chapter will be examining some detailed aspects of design and utilities in the existing motorway service areas. Discussion will start with the distribution of service areas, and the intervals separating them, and will also include the layout of motorway services. Additional design details, such as landscape design, architecture, circulation, and parking facilities will also be examined in this chapter. Moreover, this chapter will examine signing in motorway service areas and other utilities and services such as electric power, water sources, noise problems, and maintenance. Finally, this chapter will examine the travellers overall evaluation of motorway service areas.

8.1 Distribution of Motorway Service Areas and Intervals Between them.

The distribution of service areas and the distances between them (intervals) are among the major issues in the planning and development of the motorway service areas. Intervals closeness to uniformity and standardization is one of the most important factors reflecting the success of the planning of these services.

In the following sections, the existing distribution of service areas and the intervals created between them will be examined, together with travellers' preferences for their frequency. In addition, comparison between the existing intervals and the American and British standards will also be discussed in the following sections.

8.1.1 Distribution of Motorway Service Areas.

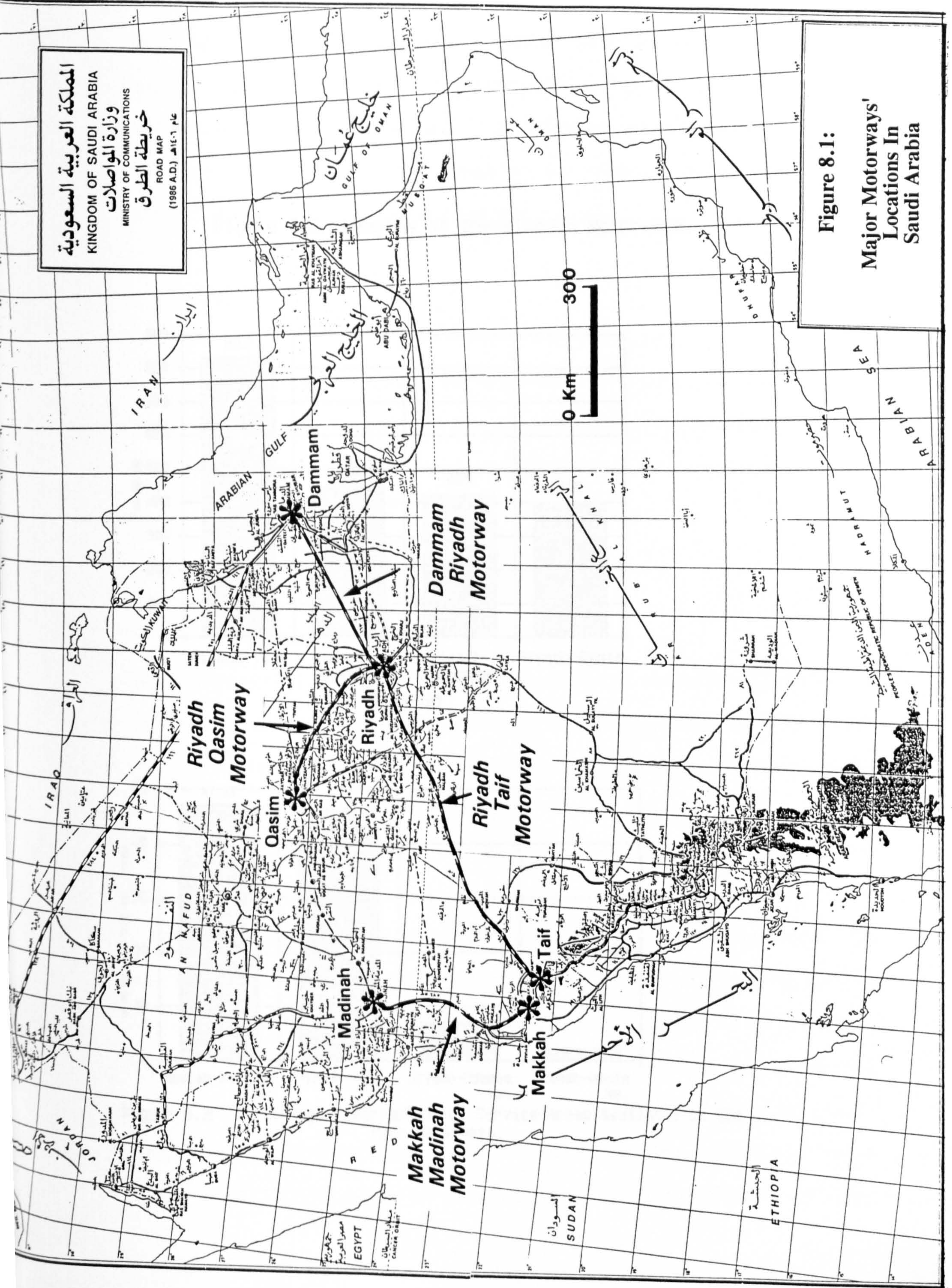
As explained earlier in the Introduction and Methods Chapters, the four motorways studied were:

1. Riyadh-Dammam
2. Riyadh-Taif
3. Makkah-Madinah
4. Riyadh-Qasim, (Figure 8.1)

All these motorways connect major cities. Three of them originate from Riyadh, the central region and the country's capital, and end in cities of different regions. The fourth connects the two holy cities of Makkah and Madinah.

These motorways vary in length. Riyadh-Taif motorway is the longest, stretching for 883 Kms, followed by Makkah-Madinah motorway, 450 Kms long. Riyadh-Dammam motorway is the third longest; 425 Kms. The shortest is Riyadh-Qasim motorway; 400 Kms long (Figure 8.2).

Amongst the major findings of the inventory carried out in early Summer 1988 was that there were a total of 125 service areas available along the four motorways mentioned above. The majority of these services are located on Makkah-Madinah motorway, making up 47.2% of the total number. 43.2% of the services are situated on the Riyadh-Taif motorway. Riyadh-Dammam motorway has 7.2% of the total number of services. The remaining 2.4% of the services available lie on the Qasim-Riyadh motorway (Figure 8.3).



The limited number of service areas on Riyadh-Qasim motorway, (2.4% of the total services) is related (unlike the other three motorways) to its delay in the commencement of construction and to the additional restrictions applied to this motorway. As a result, services found on this motorway were limited to the southern end of the north bound carriageway.

Figure 8.2: Lengths of the Kingdom Motorways.

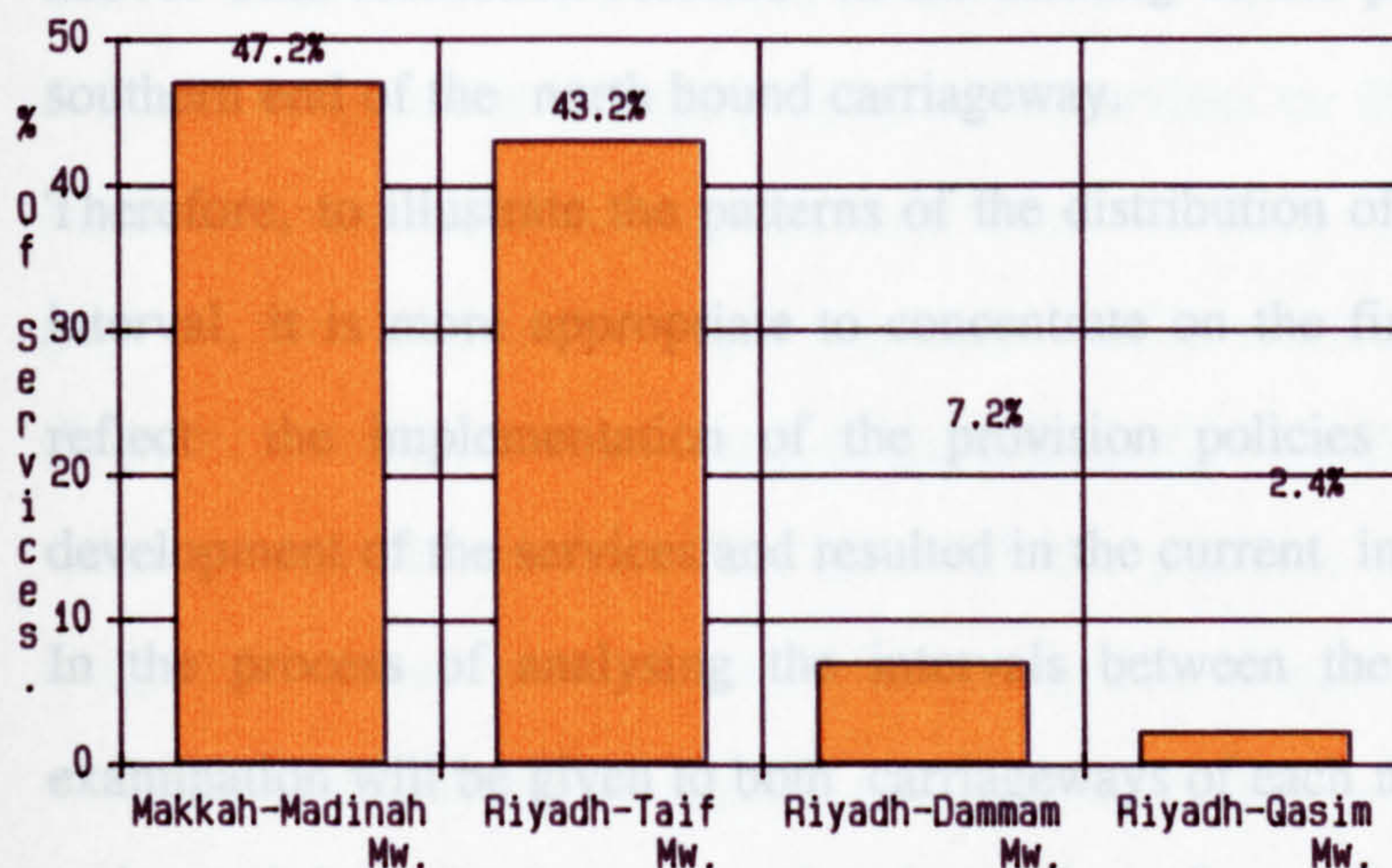
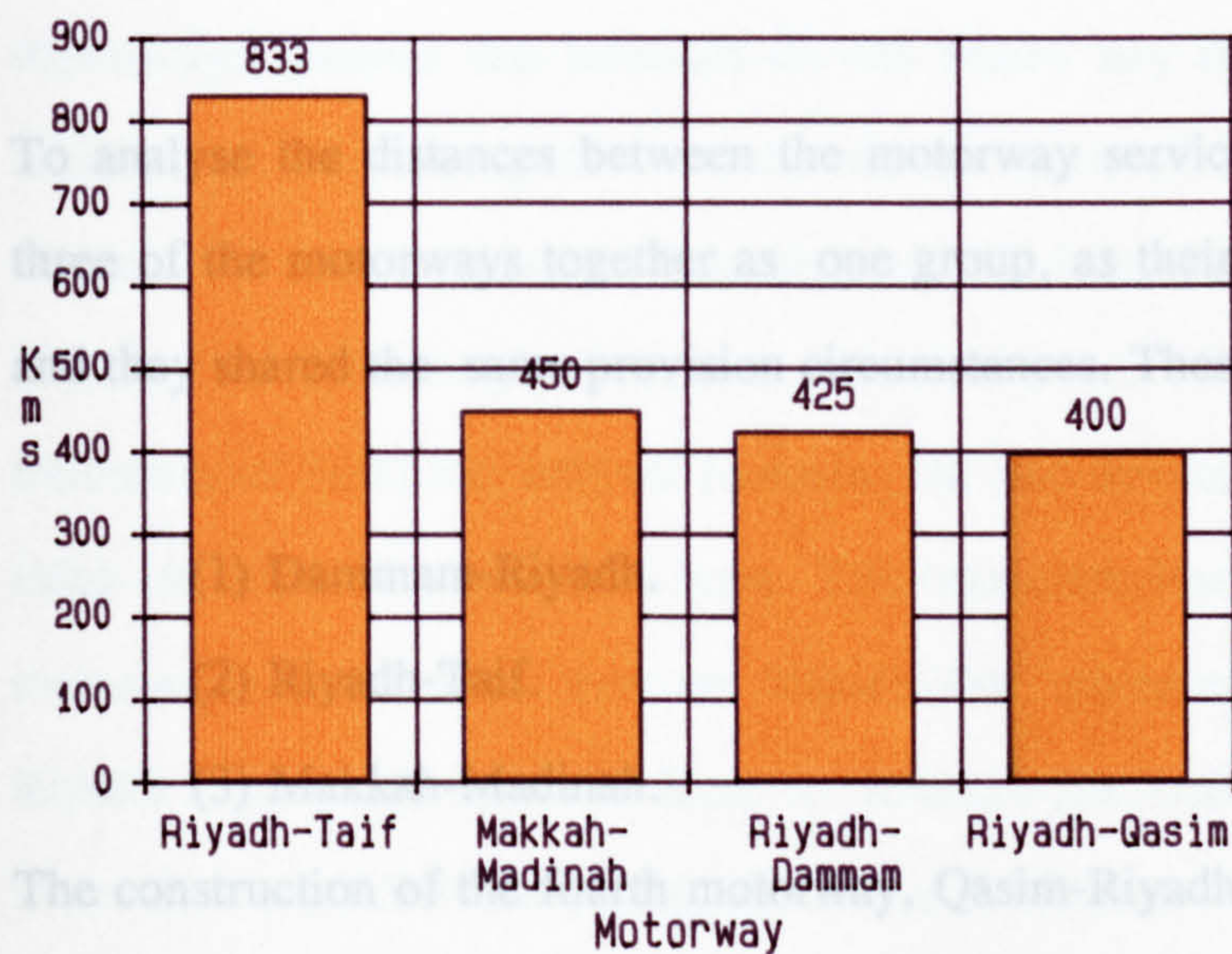


Figure 8.3: Percentage Distribution of Service Areas Available on the Four Motorways.

The limited number of service areas on Riyadh-Qasim motorway, (2.4% of the total services) is related (unlike the other three motorways) to its delay in the commencement of construction and to the additional restrictions applied to this motorway. As a result, services found on this motorway were limited to the southern end of the north bound carriageway.

8.1.2 Analysis of Intervals

To analyse the distances between the motorway service areas, we should look at three of the motorways together as one group, as their construction started earlier and they shared the same provision circumstances. These motorways are:

- (1) Dammam-Riyadh.
- (2) Riyadh-Taif.
- (3) Makkah-Madinah.

The construction of the fourth motorway, Qasim-Riyadh, as explained earlier came later and had different restrictions in provision from the three motorways mentioned above. This restriction resulted in the limiting of the provision of services to the southern end of the north bound carriageway.

Therefore, to illustrate the patterns of the distribution of services and the resulting interval, it is more appropriate to concentrate on the first three motorways. They reflect the implementation of the provision policies that had dominated the development of the services and resulted in the current intervals separating them.

In the process of analysing the intervals between the motorway service areas, examination will be given to both carriageways of each motorway (i.e. north-bound and south-bound, or east-bound and west-bound), as all the motorway services are single sided unlike many of the service areas in Britain. The major reason behind the single sided service area is that the alternative would require complex and costly

engineering work to cross the motorway, beyond the means of the individual operators.

For the purpose of the analysis and to simplify the comparison between the three motorways, the intervals of the two travel bounds (of each motorway) will be examined as one group.

Analysing the distances between the motorway service areas along the three motorways, proved that intervals do not follow any regular pattern (Figure 8.4). Examining the plotting of the intervals for each of these motorways shows the irregularity of intervals. A clear sign of this irregularity is demonstrated on the Riyadh-Taif motorway where the distance between service areas ranges from a minimum of 0.00 Km interval (meaning the two service areas are operating side to side) to a maximum of 241 Kms. The maximum intervals on each of the three motorways were: 241 kms on Riyadh-Taif motorway, 229 Kms on Dammam Riyadh motorway, and 72 Kms on Makkah-Madinah motorway. The minimum intervals were 0.00 Km on Riyadh-Taif and Makkah- Madinah motorways and 6 Kms on Dammam-Riyadh motorway. Other intervals between each motorway service areas are located between these extremes, as is clear from (Figure 8.4).

It is alarming to see a large proportion of services on Riyadh- Taif and Makkah-Madinah motorways ranging between 0 and 10 Kms apart while there are large gaps in the same motorways requiring infill services in order to reduce the distances between service areas (Figure 8.4). On the Dammam-Riyadh motorway there are fewer services than those of the previous motorways, but it too has irregularly spaced service areas. Most are spaced at intervals of 75 Kms and above, while some are spaced 10 Kms or less (Figure 8.4).

Patterns of this nature are the direct result of the development control system which seems to have left the selection of a site to the developers themselves, unaware of

the outcome on the locational aspects of services along the entire length of the individual motorways.

8.1.3 Travellers Attitude Towards Intervals Between Motorway Service Areas

Travellers' opinions differed on the issue of intervals between motorway service areas. Preferences ranged from between a minimum of 10 Kms and a maximum of 200 Kms (Figure 8.5). However, the largest group of travellers 34.3% of the total number of travellers interviewed preferred a distance of 100 Kms between service areas. The second largest group, 18.3% of travellers interviewed preferred a distance of 50 Kms between services. The third group, 11.3% of travellers interviewed preferred a distance of 75 Kms. The fourth group, 9% of travellers interviewed preferred a distance of 80 Kms separating services. The fifth group, 8.7% of travellers, preferred a distance of 150 Kms between motorway services.

The remaining groups comprised between 0.3% and 3.3% of the travellers interviewed, stating a wide range of preferences of between 10 and 200 kms separating service areas.

Moreover, as is clear from (Figure 8.6), a distance of 100 Kms between each service area was demanded by almost the same proportion of both private and commercial travellers. There was a similar high percentage for travellers wanting a distance between each service area of either 50, 75 or 80 Kms.

8.1.4 Conclusion

From the previous discussion it is clear that intervals between service areas are not following any regular pattern, spacing of service areas vary from one motorway to another and vary along the same motorway.

FIGURE 8.4: EXISTING INTERVALS BETWEEN MSAs.

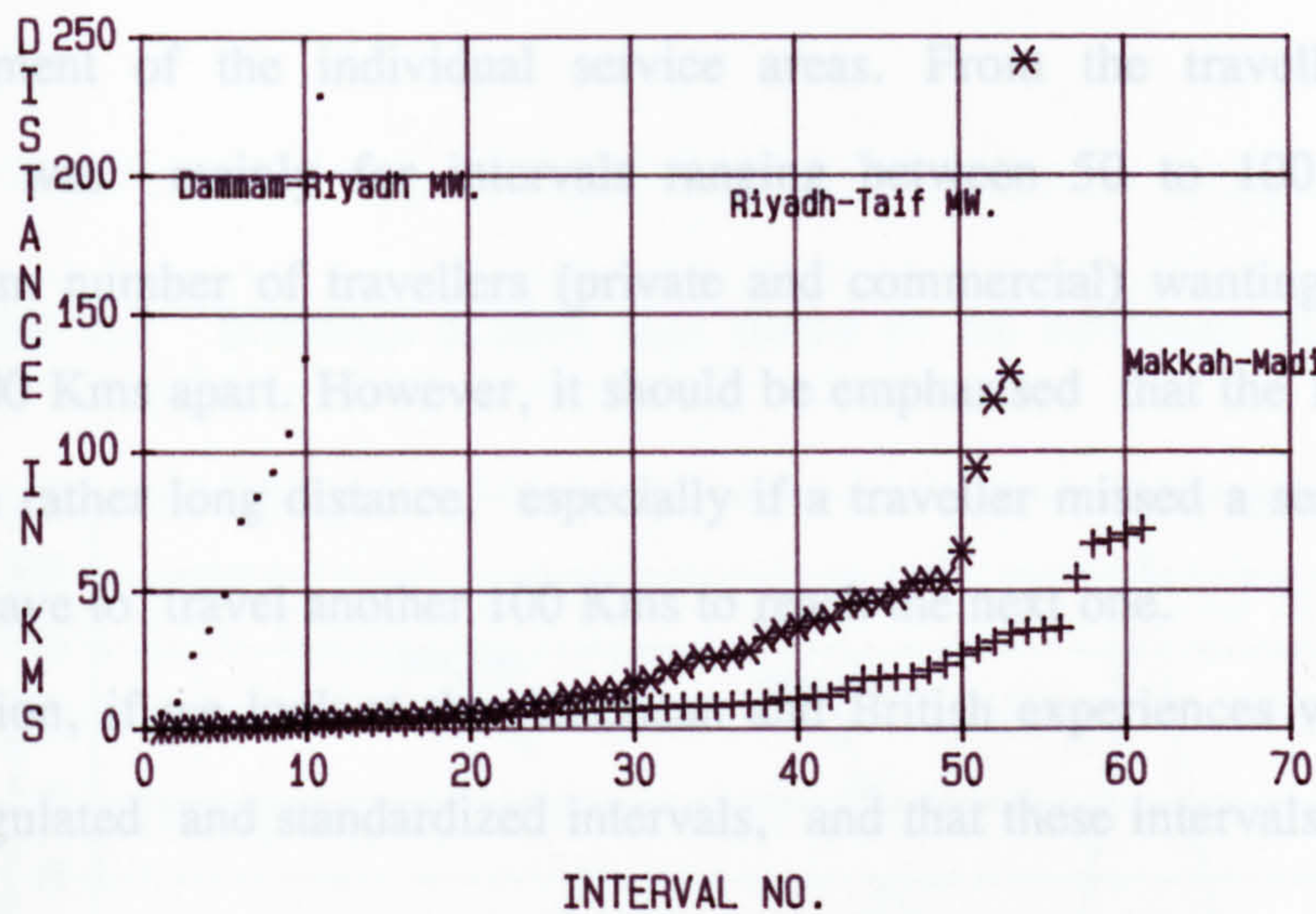
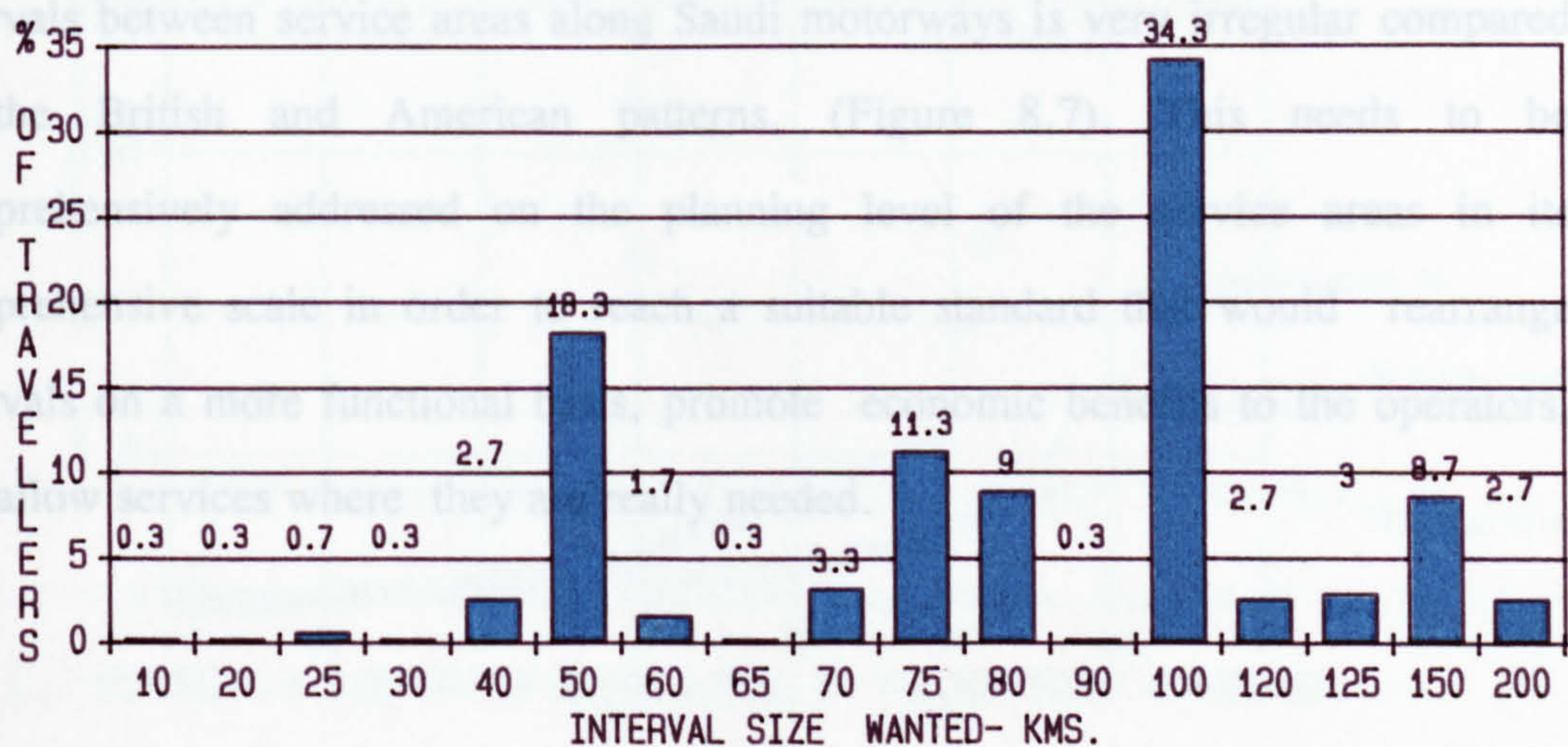


FIGURE 8.5: INTERVAL SIZES WANTED BY TRAVELLERS.



This diversity is traced back to the planning procedures dominating the development of the individual service areas. From the travellers perspective, demand was mainly for intervals ranging between 50 to 100 Kms, with the maximum number of travellers (private and commercial) wanting to see service areas 100 Kms apart. However, it should be emphasised that the 100 Kms interval is still a rather long distance, especially if a traveller missed a service area, as he would have to travel another 100 Kms to reach the next one.

In addition, if we look at the American and British experiences we find that they have regulated and standardized intervals, and that these intervals are of moderate lengths.

The British system has regulated the distances between motorway services at approximately twenty five miles (40Kms) with potential in-fill sites where needed at twelve and a half mile (20Kms) intervals¹.

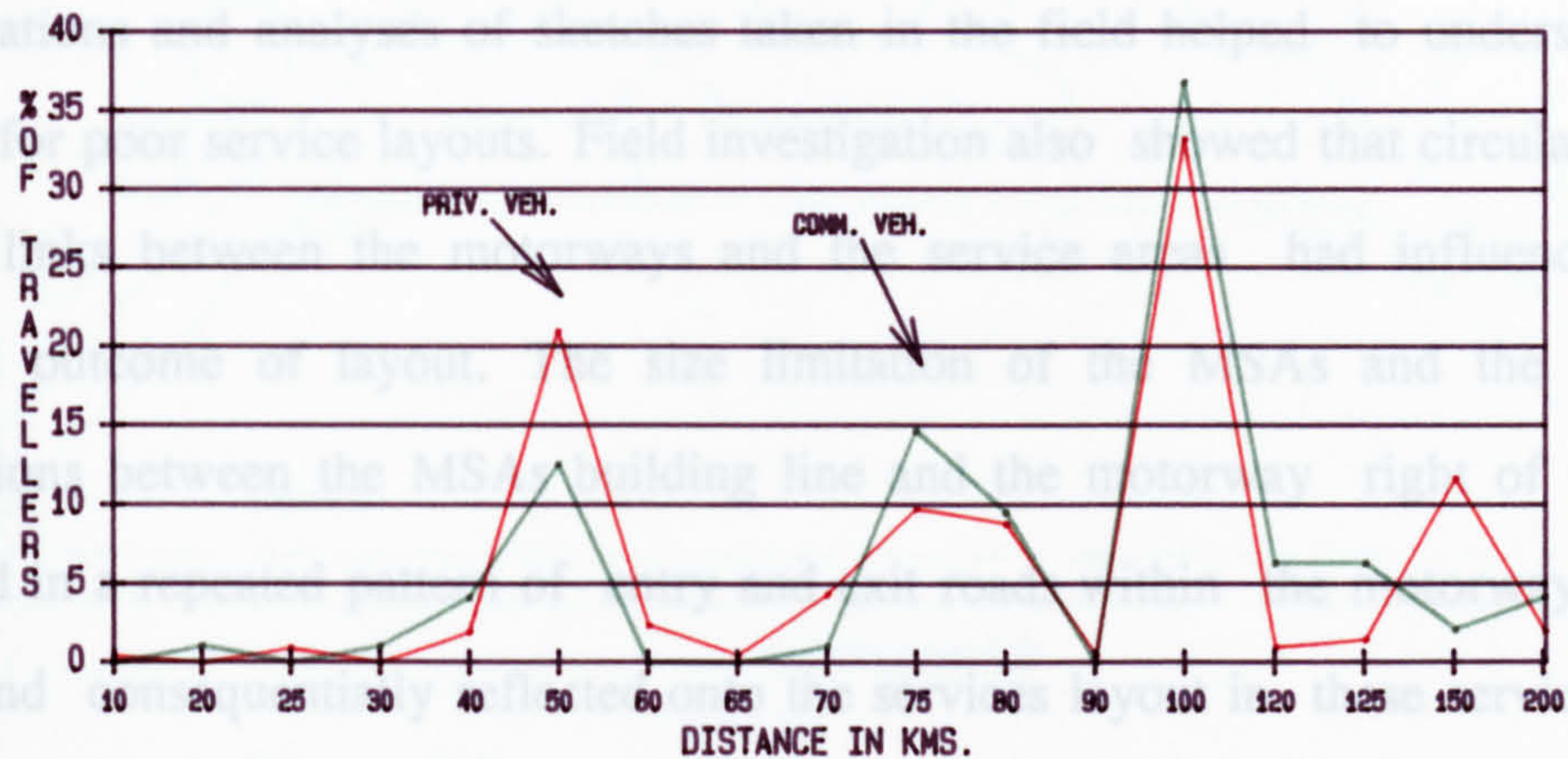
In America recommendation by the American Association of State Highway Officials (AASHO) want rest areas spaced at half hour driving time. In most states, rest areas are located at 30 to 40 miles (48 to 64Kms) intervals. In one state, the planned interval of spacing was 50 to 70 miles (80 to 113Kms); however, it was realised that this spacing could be too great².

Intervals between service areas along Saudi motorways is very irregular compared to the British and American patterns, (Figure 8.7). This needs to be comprehensively addressed on the planning level of the service areas in its comprehensive scale in order to reach a suitable standard that would rearrange intervals on a more functional basis, promote economic benefits to the operators, and allow services where they are really needed.

8.2 Services Layout in The Motorway Service Areas

During the physical survey along all the motorway service areas all the layouts of the individual service areas were examined. It was found that the majority of these service areas had shortcomings in their layouts.

FIGURE 8.6: INTERVALS BETWEEN MSAs WANTED BY THE DIFFERENT TRAVELLING GROUPS.



(Figure 8.8).

Moreover the uncreativity and lack of design thought in planning service area sites and the strong commercial logic led to the spread of a kind of linear layout of services parallel to vehicle access and circulation lines within the motorway service area. The developers' objective seems to have been the creation of a layout that would provide facilities for the different travelling groups while inside their vehicles (Figures 8.5-8.11).

The by-product of this approach was the absence of the hospitable indoor environment that would provide change and relaxation between the different travelling groups. The linear layout of services led to the vehicle-oriented layout of services which was a situation which from one point of view was a waste of space and from another point of view was a waste of time for the weary travellers.

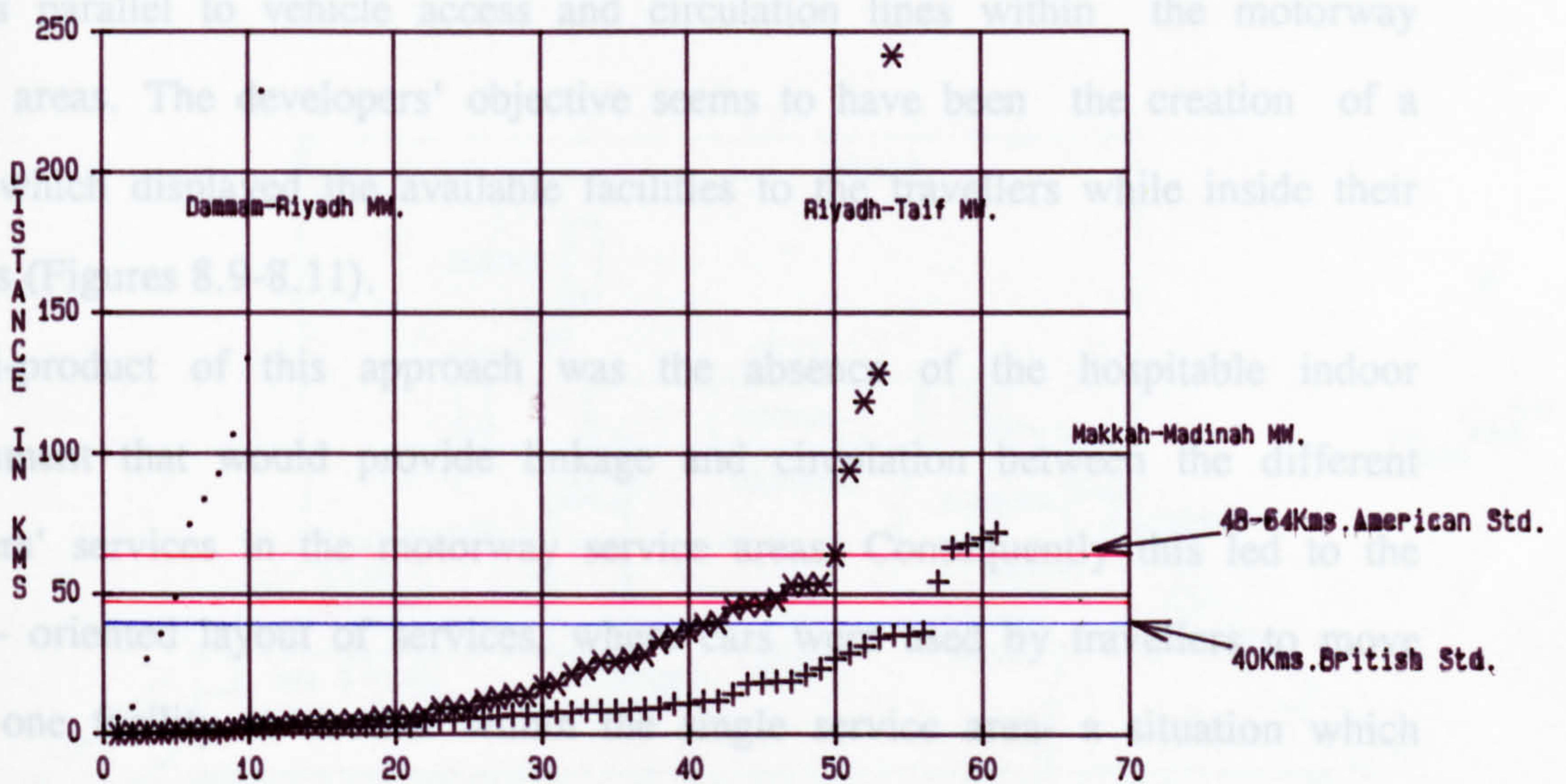


FIGURE 8.7: INTERVALS BETWEEN MSAs IN THE DIFFERENT MOTORWAYS

8.2 Services Layout in The Motorway Service Areas

During the physical survey along all the motorway service areas all the layouts of the individual service areas were examined. It was found that the majority of these service areas had shortcomings in their layouts.

Observations and analyses of sketches taken in the field helped to understand the reason for poor service layouts. Field investigation also showed that circulation and access links between the motorways and the service areas had influenced the general outcome of layout. The size limitation of the MSAs and the distance regulations between the MSAs building line and the motorway right of way has resulted in a repeated pattern of entry and exit roads within the motorway service areas and consequentially reflected onto the services layout in these service areas (Figure 8.8).

Moreover the uncreativity and lack of design thought in planning service area sites and the strong commercial logic led to the spread of a kind of linear layout of services parallel to vehicle access and circulation lines within the motorway service areas. The developers' objective seems to have been the creation of a layout which displayed the available facilities to the travellers while inside their vehicles (Figures 8.9-8.11).

The bi-product of this approach was the absence of the hospitable indoor environment that would provide linkage and circulation between the different travellers' services in the motorway service areas. Consequently this led to the vehicle- oriented layout of services, where cars were used by travellers to move from one facility to another within the single service area- a situation which undoubtedly works against the relaxation and tranquillity needed by the weary travellers.

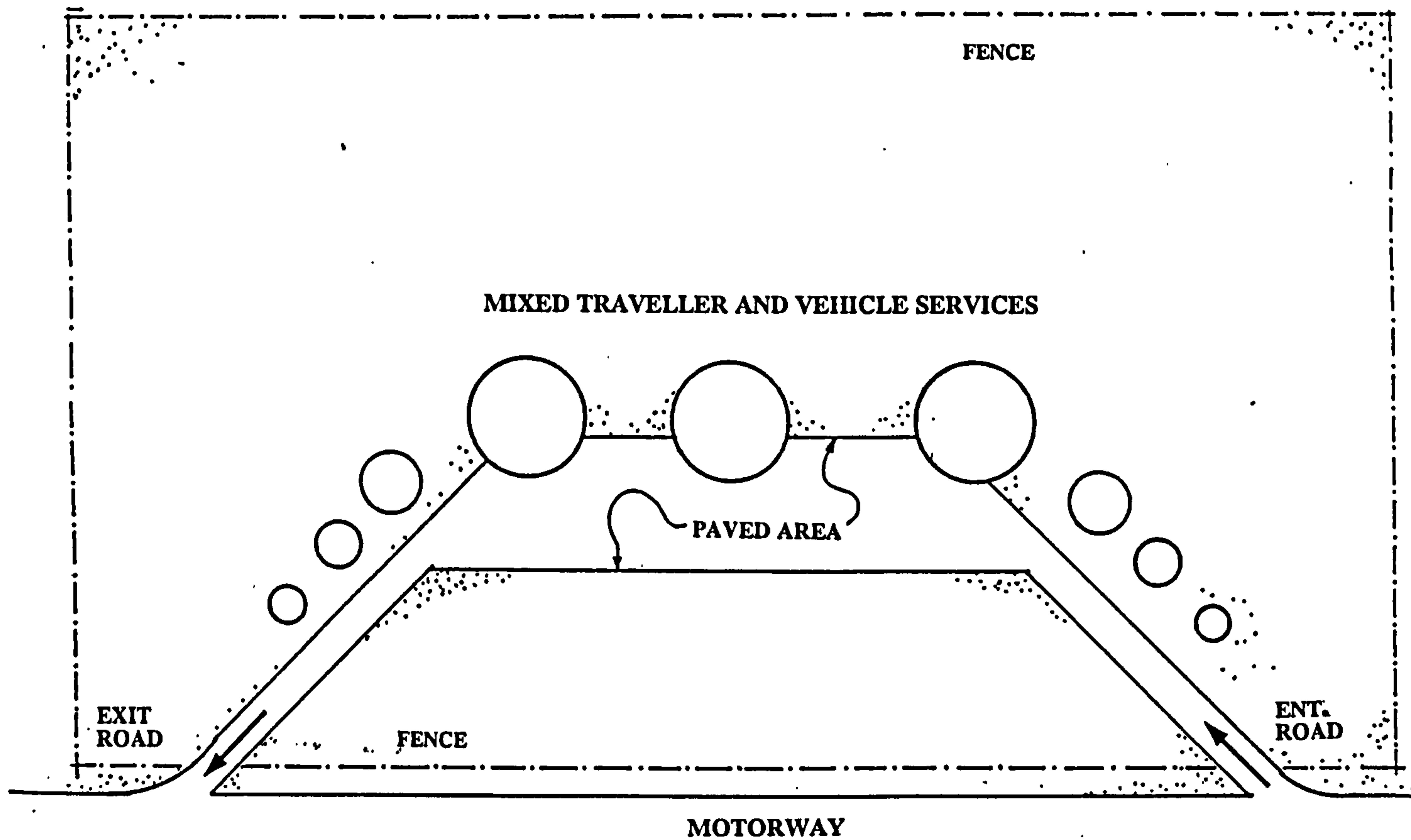


Figure 8.8:
Schematic Layout Showing Circulation Influence on the Location of the Different Services.

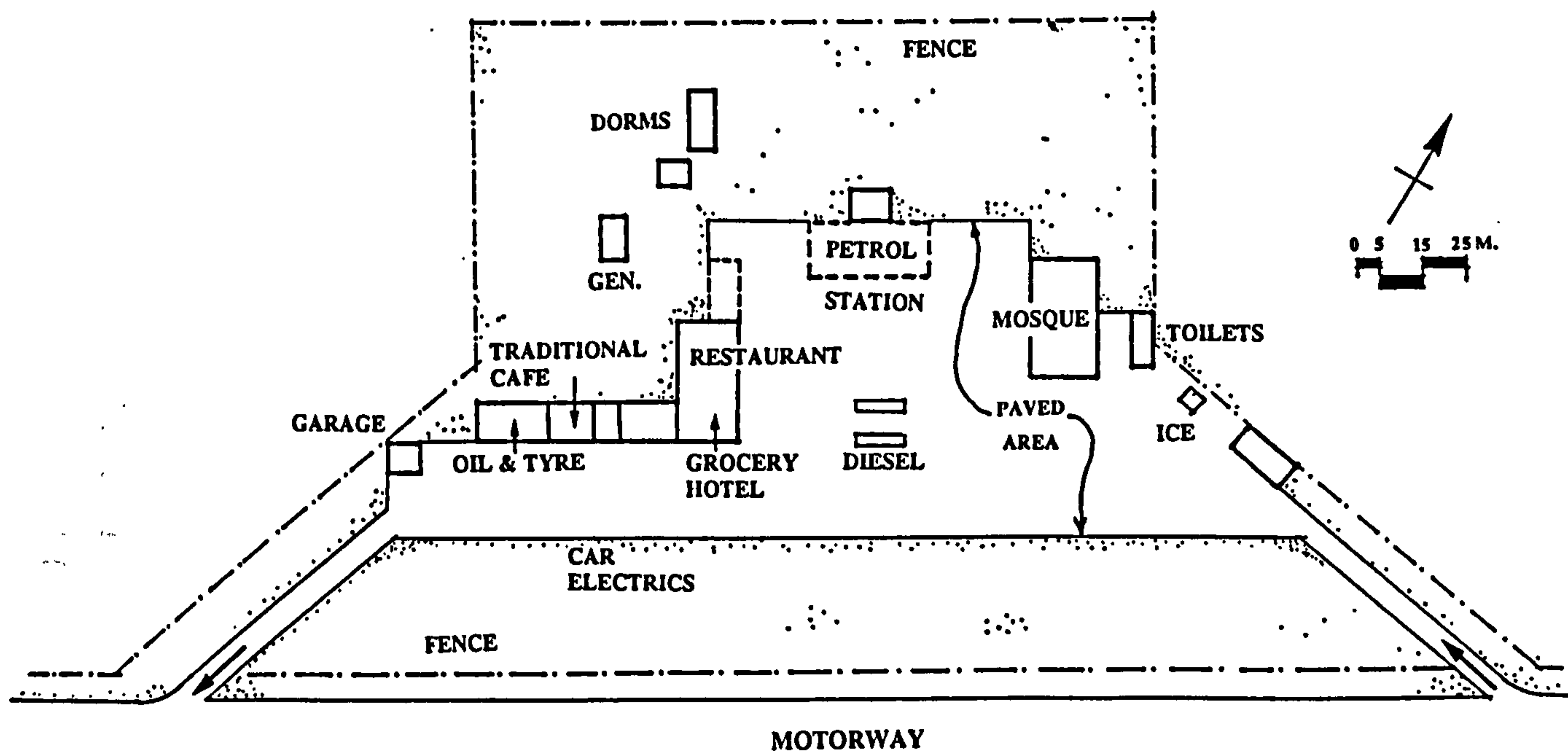


Figure 8.9:
A Service Area Layout on Dammam-Riyadh Motorway.

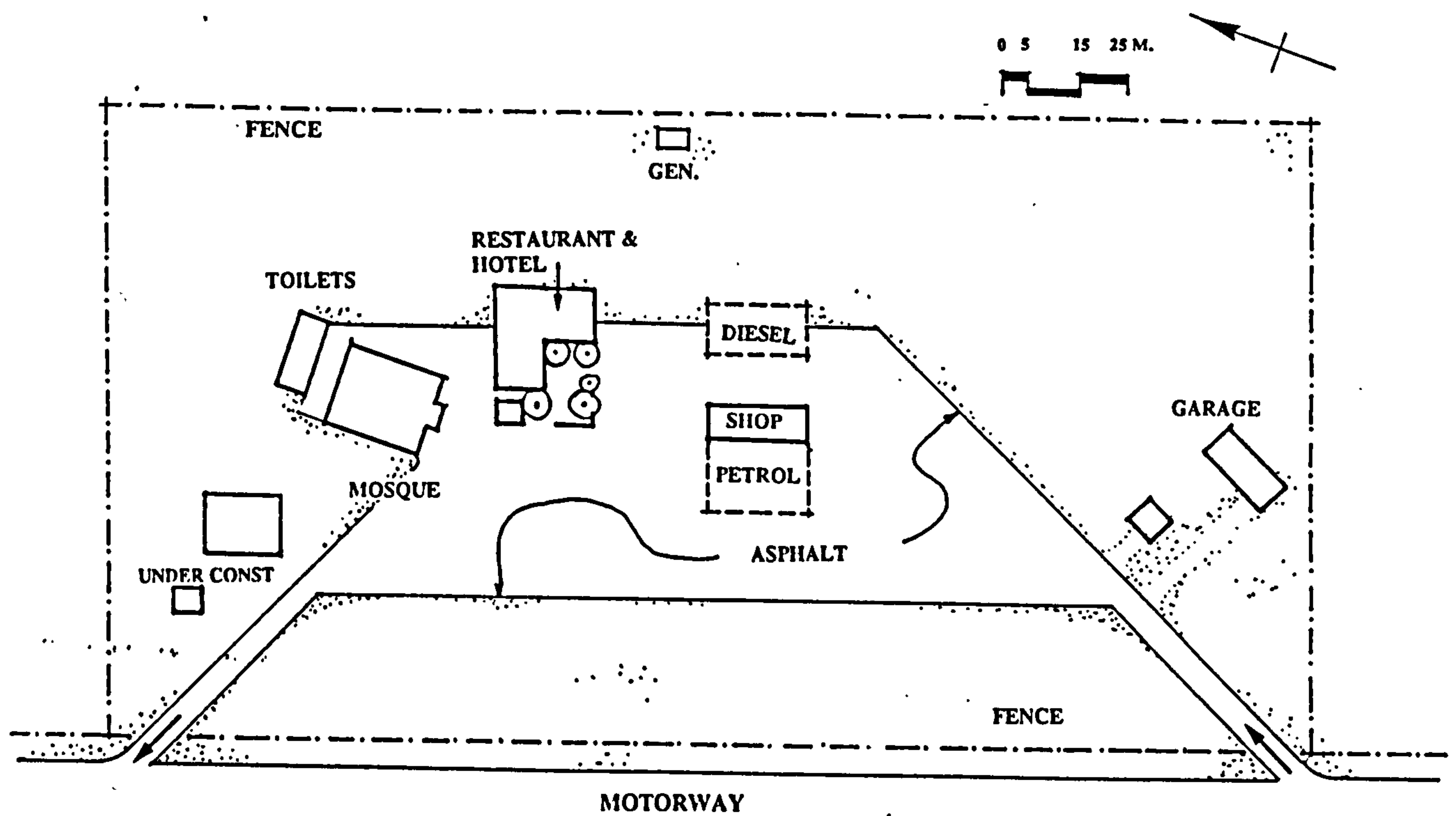


Figure 8.10:
A Service Area Layout on Makkah-Madinah Motorway.

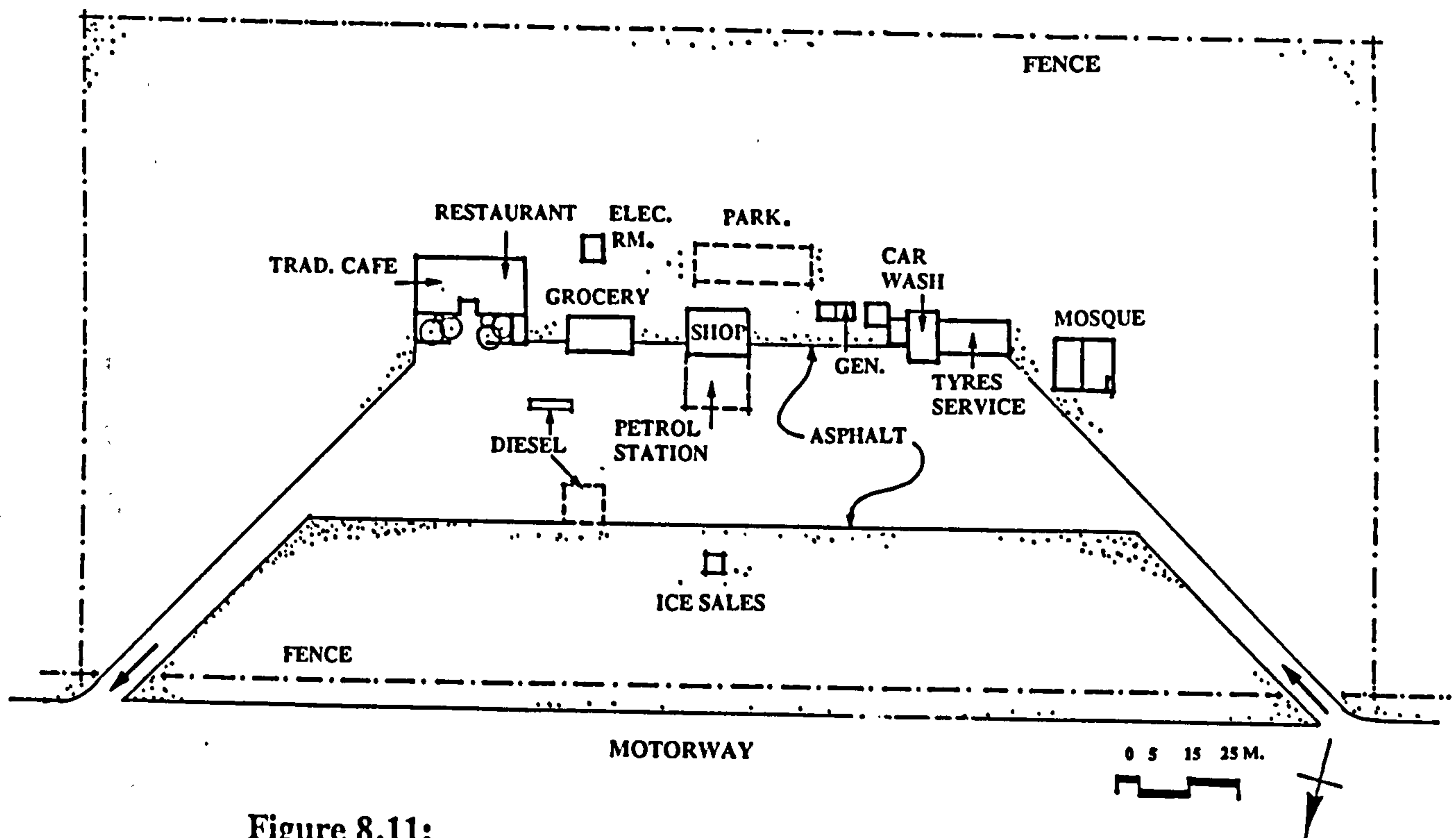


Figure 8.11:
A Service Area Layout on Riyadh-Taif Motorway.

Another shortcoming of this approach was the spread of parked vehicles along the sides of these services and the lack of defined parking areas in the motorway services, which resulted in parking chaos in many motorway service areas.

A key solution to this situation would have been to cluster services beside a parking area. However this approach should ensure that only short distances should separate the parking area from the rest of the travellers' services and that it should preferably reduce the amount of pedestrian exposure to summer intensive solar radiation. Moreover, vehicle oriented services should also be grouped together to encourage better layout and hence better circulation in the motorway service areas as explained earlier in chapter seven (Figure 7.24 , Chapter 7).

On the other hand, any successful layout should also consider the different stopping patterns made by travellers in respect to their duration and services obtained.

According to the questionnaire results, there are short stops and long stops made by travellers. The average short stop for all travellers is 16.7 minutes and the average long stop for all travellers is 67.3 minutes. From observations, it was clear that the short stops were usually made to obtain fast services such as petrol and using the grocery, and the long stops were usually made to obtain time-demanding services such as dining facilities, tyre and oil services, or other similar services.

Therefore, the layout design should take into consideration the different travellers' interests which can be fulfilled by a combination of: vehicle circulation patterns, proper positioning of facilities, and may be the limited duplication of certain facilities, such as toilets and shops as explained earlier in Chapter Seven.

8.2.1 Views From the Motorway Service Areas

One of the neglected aspects of the service area layouts is the consideration given to views from the indoor of service areas, especially the dining areas.

(Figure 8.12) shows the percentage of different existing views from indoor facilities in service areas. The view of the motorway is the most frequent one comprising 96% of the service areas. The view of the parking area and internal roads also occurred frequently: 95% of the motorway service areas looked in that direction. 53% of the motorway service areas had views of petrol stations and rated third in frequency. The views of the broader landscape occurred the least often with, only 3% of the indoor facilities having such views.

One of the main reasons behind the views created in the motorway service areas is the layout of the services themselves. Commercial logic which led to such layouts in the first place, also influenced to a great extent, the orientation of openings (doors and windows) of some facilities such as restaurants and gahwahs. In these facilities, the bulk of the openings are oriented to face the motorways, parking areas, petrol stations, or a combination of them.

It is unfortunate that only a small percentage of the motorway service areas has benefited from the views available. Many beautiful mountain views and rock formations were not taken into consideration by the designers as one of the important ways for enhancing the visual amenities of the service areas (Figure 8.13).

8.3 Landscape Design in the Motorway Service Areas

Although travellers expressed genuine interest in the improvement of landscape architecture and planting design in MSAs (explained in Chapter 7), the field result has shown that the use of plant materials was the major landscape element in the service areas. However, it should be emphasised here that plant materials were absent in 50.4% of the motorway service areas. Even in some service areas where plants were used, they lacked proper maintenance and care from the operators.

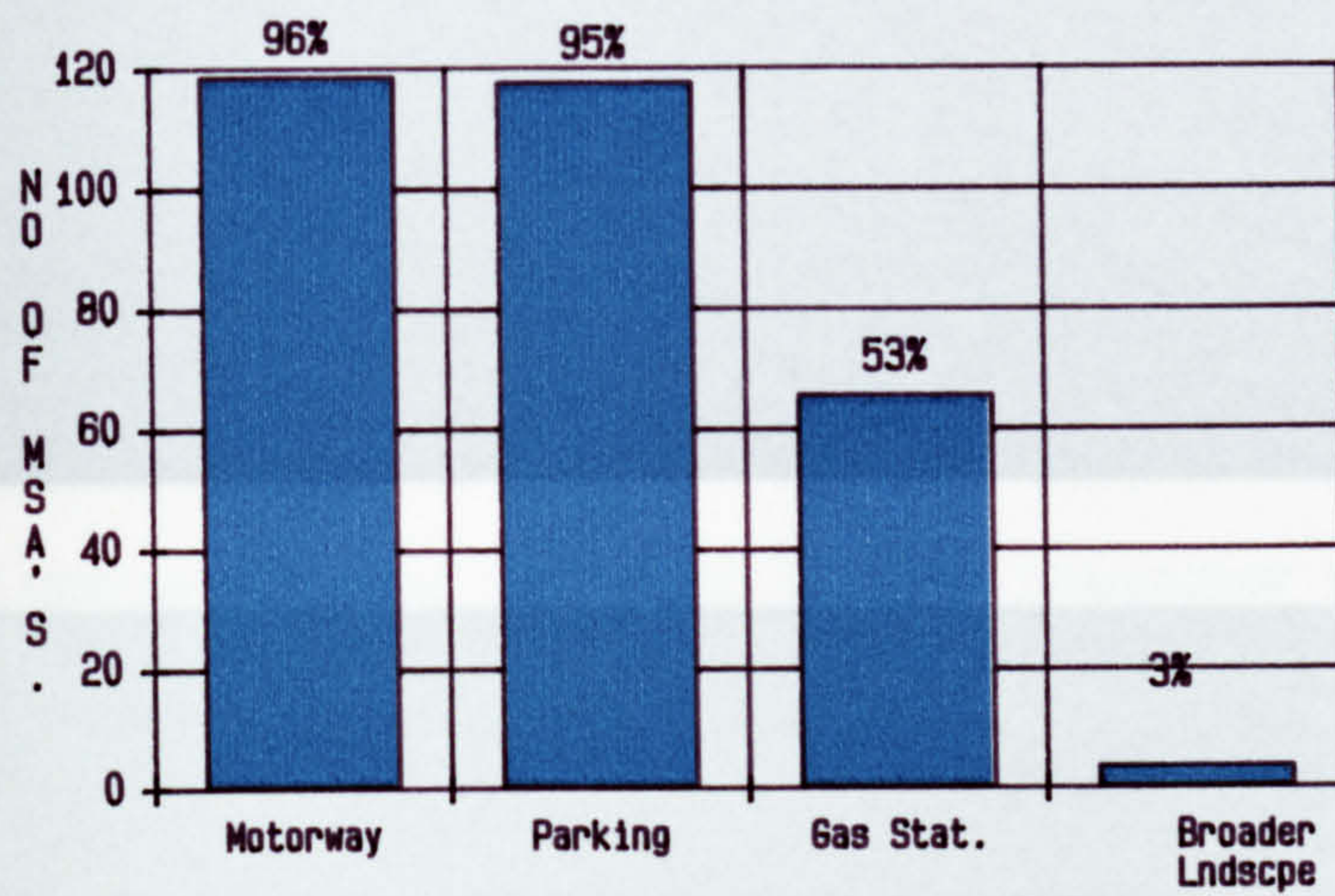


FIGURE 8.12: VIEWS FROM THE MOTORWAY SERVICE AREAS.

Figure 8.13:
Many Beautiful Mountain Views and Rock Formations Were Not Taken in
Consideration by MSAs' Designers.



Figure 8.13:
Many Beautiful Mountain Views and Rock Formations Were Not Taken in Consideration by MSAs' Designers.

In addition, plants in some cases were planted in improper locations in relation to their abilities to withstand wind, drought, or solar radiation.

Many of the planting design problems seem to be the result of dealing with the site landscape in general and planting design in particular as extra elements to be added after the completion of the service area projects. The stress on the structural environment in the service areas, clear from the field investigation and government regulations, suggest a play down of the importance of landscape design. A totally different attitude should prevail in connection to landscape and planting design, an attitude that will lead to a strong emphasis on producing successful landscape designs, and considering it as an essential part of the success of the service areas themselves. Such an emphasis would promote the concept of traveller's rest and relaxation in the middle of the harsh desert environment.

On the government side there is slow recognition of professional landscape architects being important contributors to the development of successful service areas, although in the Ministry of Transport, where a new Road Services Division has been created, there are no professional landscape architects within its engineering staff. In fact, the official recognition of landscape architecture in Saudi Arabia as a separate and independent profession only came in late 1988, when the Civil Service Department introduced this speciality to its list of recognised professions³. In other developed countries, the link between landscape architects and motorist services was very clear. In Britain, there are landscape advisers within the Ministry of Transport (part of Highway Management and Administration Division) involved in the development of service areas⁴. In the U.S, landscape architects are also employed by the states' road departments to do similar tasks.

8.3.1 Plant Materials Used in The Motorway Service Areas

As explained earlier, almost a half of the motorway service areas had used plant materials in landscaping their sites. Plants used were of different species and kind and included trees, shrubs, succulents, vines, and ground covers.

8.3.1.1 Trees

Trees have the widest usage in the motorway service areas compared to the other plants. Although not found in all of the motorway service areas, twenty two species of trees were used.

To simplify the number of tree species used in the motorway service areas, species were divided into three groups; trees of a high rate of usage, trees of a moderate rate of usage, and trees of a low rate of usage. Tables (8.1-8.3) show the different trees according to their frequency of usage in the motorway service areas.

As can be seen from the tables mentioned above, Eucalyptus trees were found in 39 service areas (Table 8.3). The attributes of the Eucalyptus tree, an Australian native, accounted for its popularity. Its fast growth rate and its resistance to heat were among its attributes (Figure 8.14). Other species had variable attributes and performance levels of withstanding the elements of the environment, one of these successful species is (Phoenix dactylifera) the Dates Palm (Figure 8.15). The characteristics of the different trees used are also summarised in the three tables (Tables 8.1-8.3).

TREES OF LOW USAGE IN THE MSA'S. (USED IN 10 MSA'S OR <)	NO. OF MSA'S	H E I G H T (M)	TOLERANCE		T E X T U R E	REMARKS
			D R O U G H T	S A L I N I T Y		
1.ACACIA	3	20	T	S	F	Shade Tree
2.CASURINA stricta	4	20	T	S	F	Wind Break,Fast Growth
3.CITRUS lime	1	6			M	Green Fruits.
4.CUPPRESSUSsempervirens	1	20	T		F	Vertical,Wind B.
5.FICUS religiosa	3	20			B	Shade Tree
6.LAWSONIA inermis	3	3-6	T		M	Fragrance,Screening
7.MELIA azedarach	2	10	T		M	Fragrance,Emetic Sds
8.PARKINSONIA aculeata	5	6	T		F	Street Tree, Whip-like Leaves
9.PROSOPIS juliflora	2	6	R	S	F	Bottle Brush Flowers
10.TERMINALIA catappa	3	15			B	Umbrella Form,Tropical Effect
11.ZIZYPHUS jujuba	5	15	R	S	M	Shade Tree, Angular
12.ALBIZIA lebbek	7	20	T		M	Shade
13.DELONIX regia	10	15	T		F	Umbrella, Fern-Leaves
14.FICUS retusa	8	10	T		M	Good Shde, Screen
15.PROSOPIS spp.	7	8	R	S	F	Good Shde,Branching.
16.TAMARIX aphylla	9	10	R	S	F	Desert Native,Screen
17.WASHINGTONIA spp.	8	20	T		M	Palm, Accent.

Table 8.1: Trees of Low Rate of Usage in the Motorway Service Areas.

TREES OF MODERATE USAGE IN THE MSA'S (USE IN 12-17 MSA'S)	NO. OF MSA	H T (M)	D R T	S L T	T X T	REMARKS
1.AZADIRACHTA indica	13	15	T		M	Good Shade
2.PHOENIX dactylifera	12	20+	T	S	M	Accent Palm,Native.
3.RICINUS communis	14	4	T	S	B	Bold Leaves.
4.TAMARINDUS indica	17	10	T	S	F	Fragrance,Shade,Frut

Table 8.2: Trees of Moderate Rate of Usage in the Motorway Service Areas.

TREES OF HIGH USAGE IN MSA'S	NO. OF MSA	H T (M)	D R T	S L T	T X T	REMARKS
EUCALYPTUS spp.	39	20+	T	S	M	Rapid Growth, Shade, Wind

Table 8.3: Trees of High Rate of Usage in the Motorway Service Areas.

Key:

Drought:
(R) Resistant
(T) Tolerant

Salt:
(S) Tolerant

Texture:
(B) Bold (M) Medium
(F) Fine

8.3.1.2 Shrubs

Shrubs were the second most common plant used. However, only ten species of shrubs were used in the service areas compared to twenty two tree species mentioned earlier. Like trees, shrubs were also ranked according to their rate of usage in the motorway service areas (Tables 8.4-8.6).

Nerium Oleander showed a high rate of usage compared to other shrubs and was used in 28 service areas. The attributes of this plant, as in the Eucalyptus tree, was the reason behind its wider usage: colour, dense foliage, and resistance to heat and drought are among these attributes (Figure 8.16). Other species used also have variable performance levels. The characteristics of all the shrubs used in the service areas are shown in (Tables 8.4-8.6).

SHRUBS OF LOW USAGE IN THE MSA'S. (USED IN 10 MSA'S OR <)	NO. OF MSA'S	H E I G H T (M)	TOLERANCE		T E X T U R E	REMARKS
			D R O U G H T	S A L I N I T Y		
1. BOUGANVILLEA spp.	5	var	R	S	F	Good Colour, Informal
2. LANTANA camara	5	1-2	R		M	Colour, Hedge
3. HELIANTHUS annuus	3	1-2		S	M	Bold Flowers
4. ARUNDO donax	2	3-5		S	M	Strong Vertical
5. HIBISCUS spp.	2	1-3	T		M	Colour, Hedge
6. TAMARIX gallica	2	3	T	S	F	Desert Native, Hedge

Table 8.4: Shrubs of Low Rate of Usage in the Motorway Service Areas.

SRUBS OF MODERATE USAGE IN THE MSA'S (USED IN 12-17 MSA'S)	NO. OF MSA	H T (M)	D R T	S L T	T X T	REMARKS
1. CLERDENDRON inerme	16	1-2	T		M	Hedge or Ground Cover
2. DODONEA viscosa	12	1-2	T	S	M	Clipped, Free Hedge
3. CORN	11	1-2			B	Bold Green Leaves.

Table 8.5: Shrubs of Moderate Rate of Usage in the Motorway Service Areas.

SHRUBS OF HIGH USAGE IN MSA'S	NO. OF MSA	H T (M)	D R T	S L T	T X T	REMARKS
1. NERIUM oleander	28	3	R		M	Colour, Rapid Growth

Table 8.6: Shrubs of High Rate of Usage in the Motorway Service Areas.

Key:

Drought: (R) Resistant (T) Tolerant	Salt: (S) Tolerant	Texture: (B) Bold (F) Fine	(M) Medium
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Figure 8.14:
Eucalyptus, One of the Most
Widely Used Tree Species in
Motorway Service Areas.



Figure 8.15:
Date Palm (*Phoenix
dactylifera*),
Accent Native Plant
in Saudi Arabia.



Figure 8.16:
Nerium oleander,
One of the Most Widely
Used Shrubs in Motorway
Service Areas.

8.3.1.3 Ground Cover Plants

Ground cover plants followed shrubs in the rate of usage in the service areas, however the number of species used was limited to four (Table 8.7).

The most widely used was *Cynodon Dactylon* grass, which was found in nine service areas (Figure 8.17). The remaining ground cover plants listed were found in between one and four service areas. (Table 8.7) shows also the different characteristics of ground cover plants used in the motorway service areas.

8.3.1.4 Trailing Plants and Succulents

Both trailing plants and succulents had a low rate of usage compared to trees, shrubs, and ground cover plants (Tables 8.8, 8.9) . In addition, the species under these two groups were limited in number: succulents limited to three species and trailing plants limited to two (Figure 8.18). Tables (8.8, 8.9) also show the different characteristics of these plants.

GROUND COVER PLANTS USED IN THE MSA'S.	NO. OF MSA'S	H E I G H T (M)	TOLERANCE		T E X T U R E	REMARKS
			D R O U G H T	S A L I N I T Y		
1.CYNODON dactylon	9	low			F	Grass, Hot Dry Conditions
2.CATHARANTHUS roseus	4	0.5			F	Spectacular Colour
3.OCIMUM	4	0.5			F	Fragrant, Upright
4.MENTHA	1	low			F	Low Creeping, Herb

Table 8.7: Ground Cover Plants Used in the Motorway Service Areas.

TRAILING PLANTS USED IN THE MSA'S	NO. OF MSA	H T (M)	D R T	S L T	T X T	REMARKS
1.IPOMEA pes-caprae	11	5+	R	S	M	Rampant, Colour
2.JASMINUM grandiflorum	4	6	T		F	Fragrance, Rampant

Table 8.8: Trailing Plants Used in the Motorway Service Areas.

SUCCULENT PLANTS USED IN THE MSA'S	NO. OF MSA	H T (M)	D R T	S L T	T X T	REMARKS
1.AGAVE americana	2	1-2	R		B	Pointed Fleshy Leaves
2.OPUNTIA dillenii	1	3-4	R		B	Accent, Desert Effect
3.YUCCA gloriosa	1	2	R		B	Accent, Desert Effect

Table 8.9: Succulent Plants Used in the Motorway Service Areas.

Key:

Drought:
(R) Resistant
(T) Tolerant

Salt:
(S) Tolerant

Texture:
(B) Bole (M) Medium
(F) Fine

Figure 8.17:
Bermuda Grass (Cynodon
dactylon), Used in One
of the Motorway Service
Areas.



Figure 8.18:
Ipomea pes-caprae,
One of the Widely Used
Trailing Plants in
Motorway Service Areas.



8.3.2 Plant Materials Design Purposes

According to the survey of the motorway service areas, it was found that there were six major design purposes of plant materials.

Figure (8.19) shows the individual frequency of each of these planting purposes. However, the most frequently observed purpose was the creation of beauty or colour in the service area, whether with foliage or the flowers of the plants: 59 service areas were found to have this planting purpose.

The provision of shade was the second most observed reason for planting: 23 of the motorway service areas provided plants for shade.

Screening was the third most observed reason for planting: 16 of the motorway service areas have screening plants.

Three other reasons observed less frequently for planting include accentuating the entrances of the service areas, providing wind barriers at the edge of the service areas, and providing a pleasant scale: relating the building to its surroundings. The frequency of these reasons were 5,5,and 3 respectively.

To conclude on examining the use of planting materials in the different motorway service areas, it is worth mentioning that these uses mentioned above are observed ones. It is very difficult in many situations to know exactly the original planting purposes. In addition, it should be pointed out that planting schemes in MSAs are not a result of professional planning. They are more likely to be based on operator's personal efforts or that of gardeners or nursery suppliers, since professional landscape consultation is still in its infancy in the Kingdom, with the exception of some major governmental and private projects in urban locations.

The country's harsh environment was a determinantal factor for the success of the different plants. This has also limited the choice of plant material, and the chance of using inappropriate plants. This limitation was also reflected in the plant materials used in motorway service areas, as the plants recorded in MSAs were within the popular plants proved to be successful in the Kingdom.

Although these plants are generally appropriate, their individual characteristics need to be considered if they are to be properly located and serving the right function.

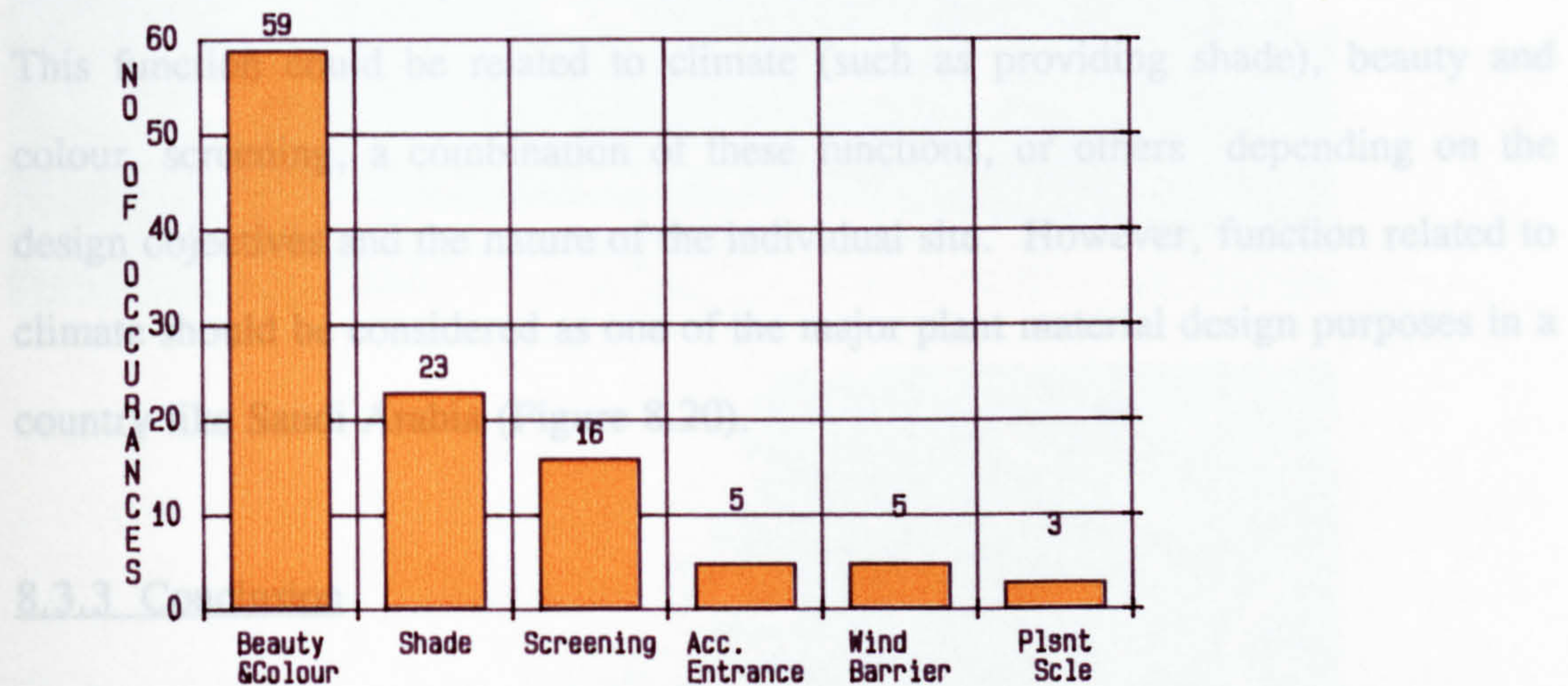


FIGURE 8.19: PLANT MATERIAL DESIGN PURPOSES IN THE MOTORWAY SERVICE AREAS.

The unclear design objectives in the service areas, have had a negative impact on the quality of the architecture in the motorway service areas. Governmental regulation and development controls lack the genuine efforts needed to improve the quality of the architecture in the motorway service areas, let alone the landscape design where its importance has been played down by the same regulations.

Many designs that have emerged from applying existing regulations and controls are of poor quality. This also applies to the landscape design, where its importance and role in the production of successful integration with the whole development theme are not stated by the same regulations and controls.

The country's harsh environment was a determinantal factor for the success of the different plants. This has also limited the choice of plant material, and the chance of using inappropriate plants. This limitation was also reflected in the plant materials used in motorway service areas, as the plants recorded in MSAs were within the popular plants proved to be successful in the Kingdom.

Although these plants are generally appropriate, their individual characteristics need to be considered if they are to be properly located and serving the right function. This function could be related to climate (such as providing shade), beauty and colour, screening, a combination of these functions, or others depending on the design objectives and the nature of the individual site. However, function related to climate should be considered as one of the major plant material design purposes in a country like Saudi Arabia (Figure 8.20).

8.3.3 Conclusion

The unclear design objectives in the service areas, have had a negative impact on the quality of design produced in the motorway service areas. Governmental regulation and development controls lack the genuine efforts needed to improve the quality of the architecture in the motorway service areas, let alone the landscape design where its importance has been played down by the same regulations.

Many designs that have emerged from applying existing regulations and controls are of poor quality. This also applies to the landscape design, where its importance and role in the production of successful integration with the whole development theme are not stated by the same regulations and controls.



Figure 8.20:
Plants Climatical Function Should be
Considered in the Kingdom' Service
Areas.

In some service areas, while some effort was made towards producing good architecture and a reasonable landscape design, it failed to come up to the level of the integration wanted. The maximum effort of landscape design was exerted in the establishment of plant materials.

Plant material, although functional, in many cases, lacked the comprehensive landscape concept that would incorporate planting with other landscape and architectural elements in the service area sites. The role of plant material in developing such a comprehensive concept, involves planting the right number of plants and the right species in the right location to serve the right function.

To illustrate further, some colourful flowers and bedding plants, for example, should be located in areas where they will be seen close-up. Furthermore, maximum benefit should be obtained from such plants equivalent to the efforts spent on their production.

The comprehensive landscape concept will also require the use of a large number of plants to serve certain design objectives, like the clustering of certain trees to produce a bold green colour effect in certain locations.

It is fair to say that plant materials in some service areas has been used in a functional way, and that a number of operators have tried to produce some impact by clustering trees in particular locations. But, in general, the plants used in many service areas were limited in number, and this limitation was reflected in the plants' general density and, consequentially, on their impact on the service areas' users.

Moreover, the degree of plant usage should be balanced by the other constraints, such as the availability of water and similar environmental elements. This makes producing successful plants a challenge in some remote service areas, especially if water has to be carried from long distances.

Therefore, plants need to be properly positioned and be enjoyed to their fullest extent. The idea of producing a mini oasis where plants are placed in an area of high visual-accessibility is a good one. This oasis could be overlooked from dining areas, gahwahs, and shops and other traveller' services. In such approach, other landscape elements like water (i.e. in water falls) could possibly be utilized to produce the maximum effect.

An area, similar to the traditional courtyard could be easily incorporated into an architectural design which could accommodate the mini-oasis concept (Figure 7.24, Chapter Seven).

In addition to plant materials, the comprehensive landscape concept should also utilise the topographic nature of some sites to enhance some organic designs: such as blending the outdoor surroundings in the service areas with the architectural forms and masses to reach more harmonious designs. Instead of employing past practices of levelling the whole site before developing the service area. It should also mean using indigenous building materials fully or partially, whenever possible, to create the effect of blending the built area with its surroundings.

In addition, this comprehensive landscape design concept should not be restricted in its application to work after the acquisition of the service area site, but would prove to be more successful if it precedes all other tasks in the development of a particular site, i.e. by implementing it as a criterion for choosing the site in the first place. Such a criterion will help in selecting sites with potentially pleasant landscape, which reduce the efforts of enhancing such potentials.

8.4 Architecture of the Motorway Service Areas

To evaluate the state of architecture in the motorway service areas, some detailed aspects were examined during the physical survey (inventory). These details

include: building form, building style, building materials, and other architectural details, as will be discussed individually in the following sections.

8.4.1 Building Styles in the Motorway Service Areas

In general, the building style (colour, texture and openings) in the motorway service areas is rather poor when compared to similar developments in the urban areas. The physical survey showed that many building styles in the motorway service areas were below the standards expected from such important public facilities (Figures 8.21, 8.22). In fact, several factors contributed to these poor results-among them, the uncoordinated use of different building materials in the individual service areas. In some cases, although new extensions were added to the service areas using the same materials, they were different in colour, texture or openings.

A simple comparison between the motorway service areas and some of the existing urban petrol stations (especially the newly constructed ones) highlights the difference between the two in their detailed aspects of building style. Petrol stations, especially latterly, in many urban areas have paid particular attention to their building style.

8.4.2 Building Form in the Motorway Service Areas

As with building style, building form in many motorway service areas has the same shortcoming of being less imaginative when compared to buildings of similar nature within the urban areas (Figures 8.21, 8.22).

The field survey has shown that building forms in a large number of motorway service areas are affected by the use of different building materials. Moreover, the layout of many motorway service areas, (where isolated buildings are used for different services) has contributed greatly to an unharmonious building outline.



Figure 8.21:
Form and Style in Some Urban Petrol Stations.

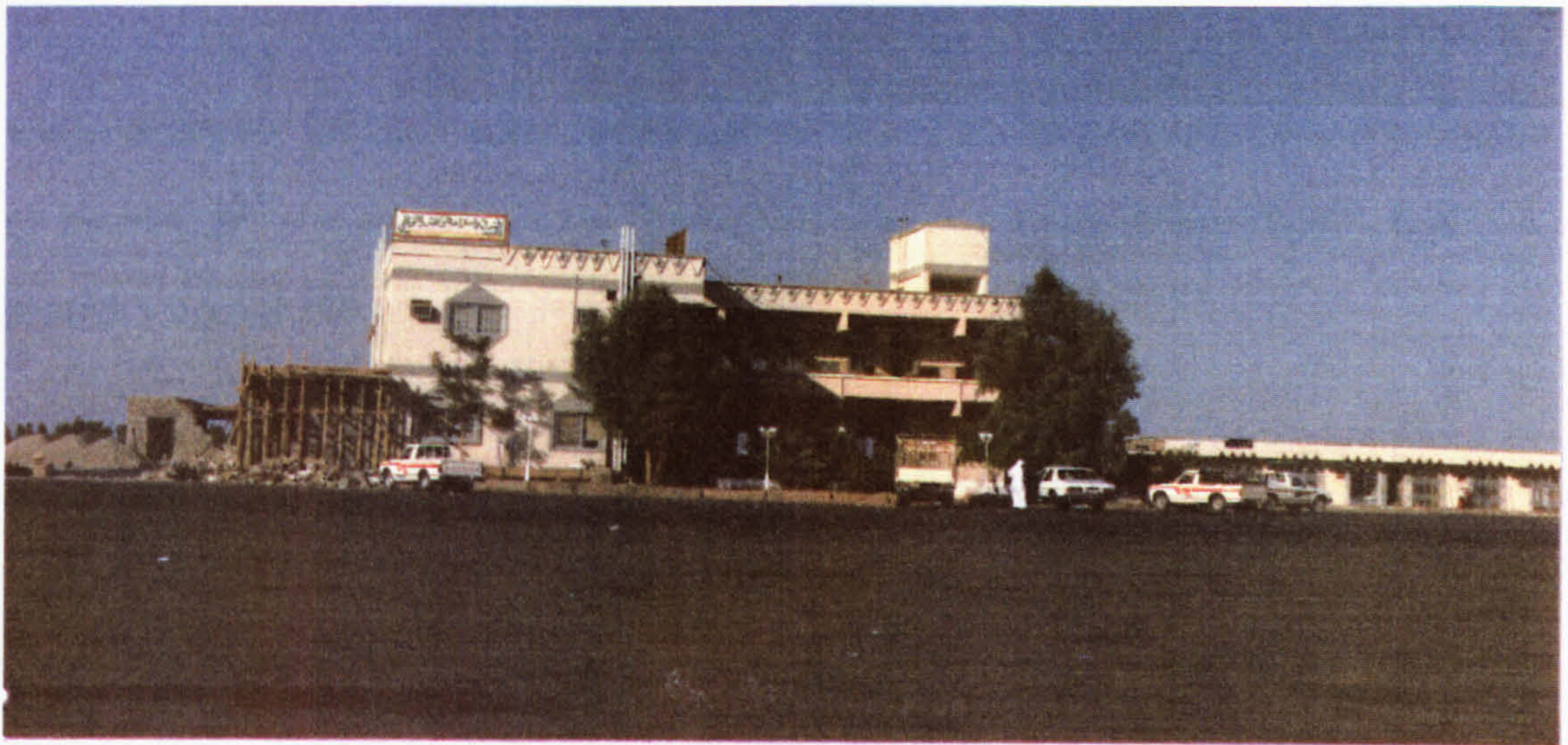
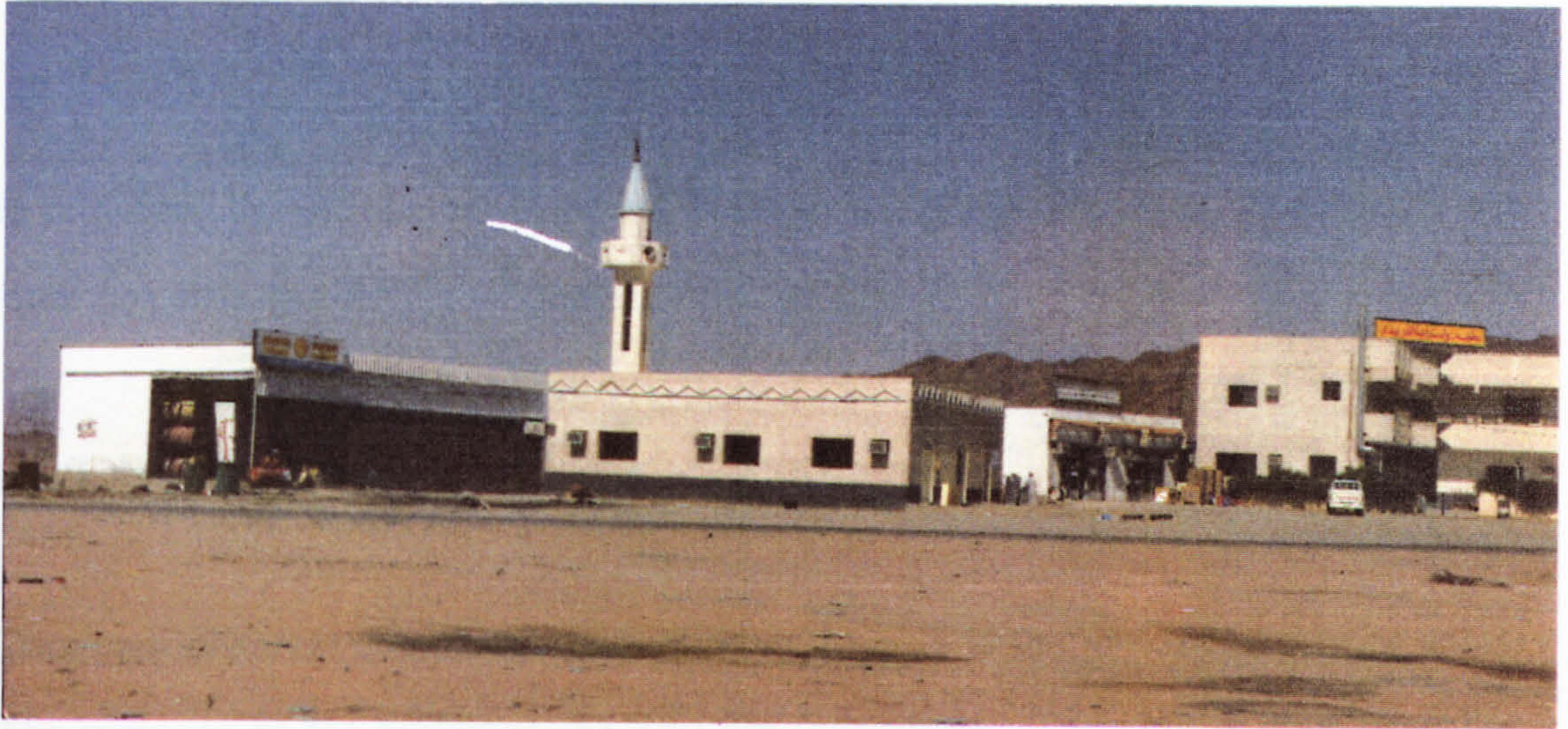


Figure 8.22:
Form and Style in Some Motorway Service Areas.

In addition, the difference in height between building complexes, in some service areas has also resulted in an uneven building line.

8.4.3 Building heights in the Motorway Service Areas

There are different combinations of building heights in the motorway service areas. The majority of the buildings (63.7%) are one storey. The second most prevalent combination (33.1% of the motorway service areas) had one and two storey buildings. 1.6% of the MSAs had two storey buildings and a further 1.6% had a combination of one storey and three storey buildings (Figure 8.23).

By examining the relation between the building's height and the availability of rented accommodation in the motorway service areas it was found that one storey MSAs had a smaller percentage of rented accommodation than MSAs with more than one storey (Figure 8.24). Only 10.1% of service areas with one storey buildings had rented accommodation, whereas 50%-100% of buildings of other combinations of height provided rented accommodation. In fact, the majority of the rented accommodation in the motorway service areas is situated in the upper floors, which accounts for the higher percentage of rented accommodation in service areas of more than one storey. Upper floors in the service areas were mainly built for rented accommodation.

8.4.4 Building Materials in the Motorway Service Areas

There are many different combinations of building materials used in the motorway service areas. However, this kind of diversification has no coherent style or form to accommodate that diversity (Figure 8.25).

The use of different construction materials in the individual buildings in many motorway service areas brought with it the inevitable difference in form and style.

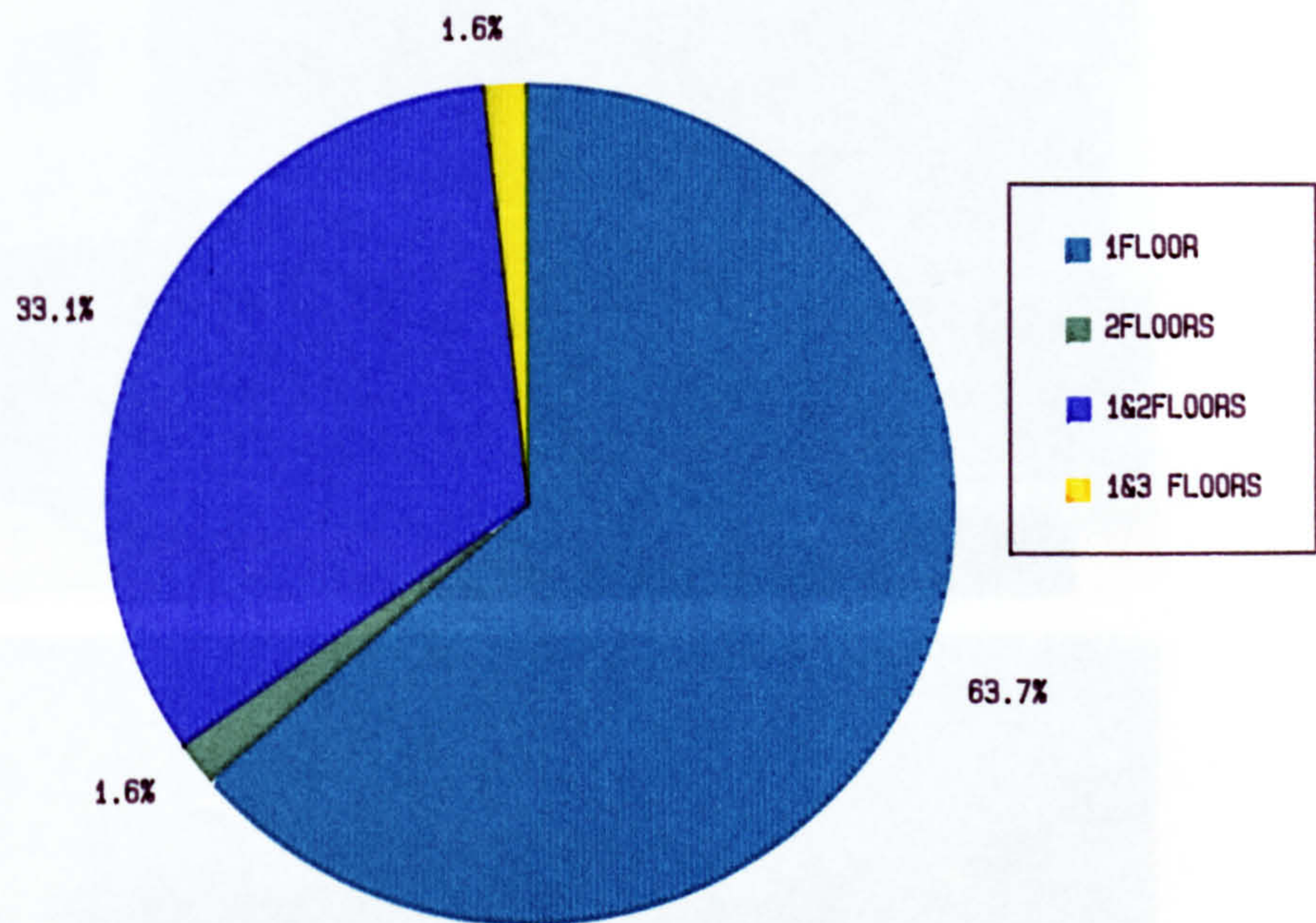


FIGURE 8.23: THE HEIGHT OF MSA' BUILDINGS.

FIGURE 8.24: THE RELATION BETWEEN THE BUILDINGS HEIGHTS AND THE AVAILABILITY OF MOTELS IN THE MOTORWAY SERVICE AREAS.

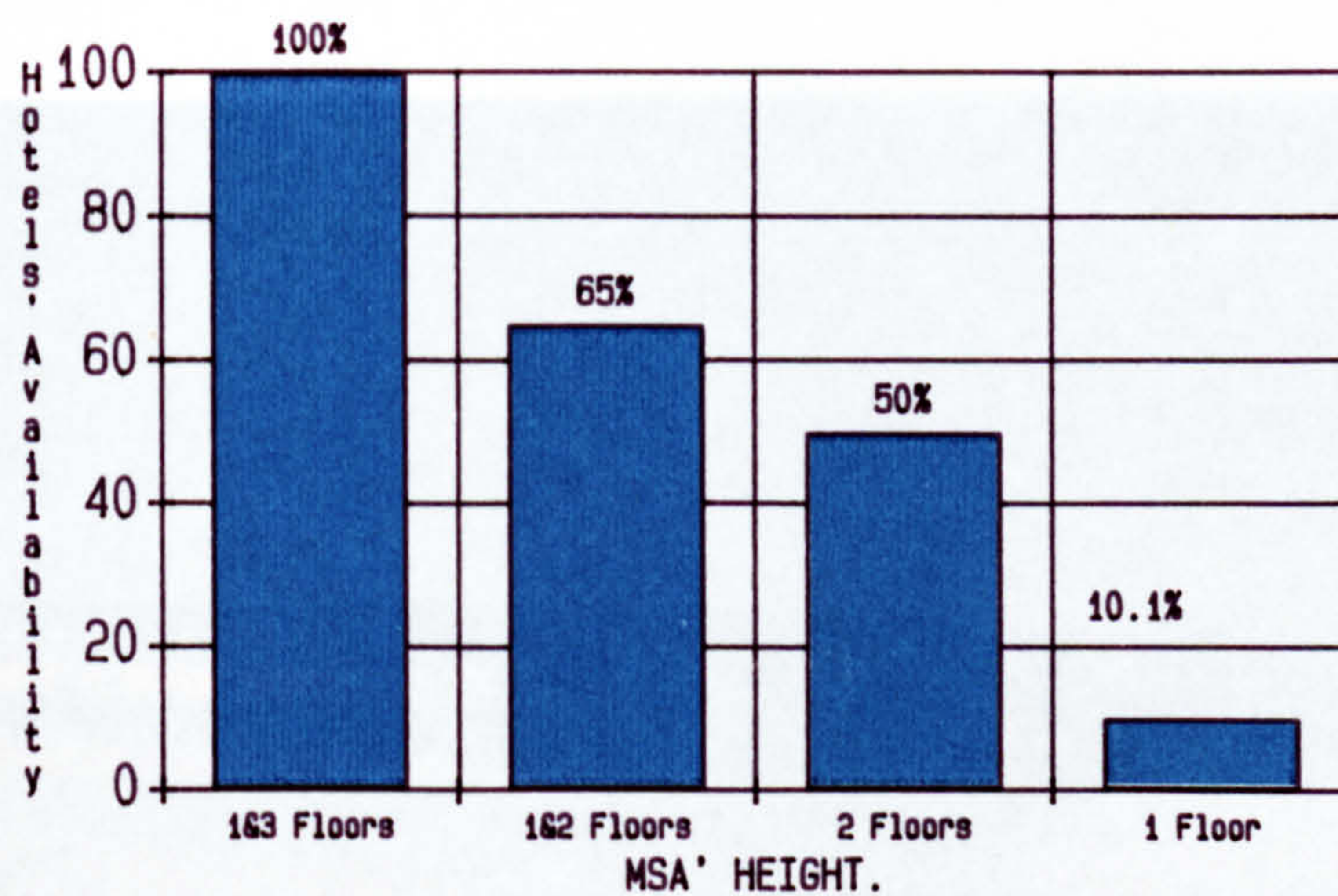


Figure 8.23: Diversity in Building Materials Used: Effective Building Style in Motorway Service Areas.

a.



b.



(a) and (b) Are in the Same Service Area.

c.

Figure 8.25: Diversity in Building Materials Used, Effected Building Style in Motorway Service Areas.

For example, reinforced concrete and concrete blocks are among the dominant building materials used in the motorway service areas. They are used primarily for more important buildings of the motorway service areas as they cost more than other building materials and take longer to be constructed.

Financial pressures, therefore, have resulted in the combination of reinforced concrete with less expensive materials in the motorway service areas. Nevertheless, this diversity of building materials in addition to the individuality of some structures and facilities in some service areas has led to the creation of independent forms and styles.

For instance, the important buildings made of reinforced concrete, in many service areas, were isolated in form and style from other buildings in the same service areas. In fact, many of these concrete buildings had a strong resemblance to urban apartment buildings. The prime reason behind that was the lack of innovation in producing forms and styles in these buildings.

It was difficult to summarise the building materials used in the construction of service areas as so many combinations existed in the individual service areas.

Nevertheless, reinforced concrete and concrete blocks were the most extensively used building materials in the service areas.

The following groups summarises the different materials used in the construction of service areas:

The first group, 19% of the motorway service areas, used reinforced concrete and concrete blocks exclusively, (a widely used combination in contemporary Saudi Arabian architecture).

The second group, comprising 36% of the motorway service areas, used reinforced concrete and concrete blocks as the dominant building material. In addition, a limited usage of other materials, such as steel, and concrete roofs reinforced with wooden beams were found in this group. This group combines reinforced concrete buildings with buildings of lower quality, especially those buildings where wood is

used in reinforcing the concrete roofs, (a construction method used in transitional architecture, but seldom used in contemporary urban architecture).

The third group, representing 22% of the motorway service areas, uses a combination of reinforced concrete with concrete blocks and other materials, which includes steel and concrete roofs reinforced with wooden beams. This combination differs from the previous one in the proportion of reinforced concrete used in relation to the other materials. In the previous group there was only a limited usage of 'other materials' while a large proportion of 'other materials' was used in this third group.

The fourth group, 17% of service areas, was dominated by the use of concrete blocks with concrete roofs reinforced by wooden beams. A limited usage of steel was found in the majority of the service areas of this group. This group perhaps has the poorest architectural quality compared to the five groups identified.

The fifth and last group, 6% of the service areas, was dominated by the use of concrete blocks and steel roofs. Among the features of this method of construction is that it is quick to construct and cost less than the reinforced concrete alternative. However, in urban situations, this method is usually associated with warehouses and buildings of similar nature, where large spans are required.

8.4.5 Building Colours in the Motorway Service Areas

In the 1980's a new trend was spreading in the urban areas as municipalities were trying to enforce the use of white colours on buildings' exteriors. That trend also spread to the motorway service areas.

Based on the result of the survey carried out in the service areas, it was found that the majority of the motorway service areas were painted either exclusively white or white with additional colours. Only small percentage of the motorway service areas were painted in other colours.

As shown in (Figure 8.26), the majority of MSA' buildings (50.4%) are a combination of white and 'other colours'. The 'other colours' are different from one service area to another and include browns, blues, and greens; but white remains the dominant colour.

The second group is white coloured MSA' buildings. 45.1% of motorway service areas had buildings painted exclusively white.

The third group is brown coloured MSA' buildings. 3.5% of the motorway service areas had buildings painted brown.

The fourth and last group is MSA' buildings painted in other colours. Only 0.9% of the motorway service areas had buildings painted in other colours.

The wide spread use of white in the motorway service areas demonstrates clearly the effect of urban trends and codes on the remote service areas. However, traditionally white colour buildings in Saudi Arabia were limited to the coastal regions of eastern and western Saudi Arabia. Inner regions used adobe as the main building material and with its natural colour blended very well with its surrounding.

From a maintenance point of view, a colour close to the surrounding earth could prove to be a better choice than white, because of sand and dust carried by occasional strong winds in the desert. In addition, such colours would produce less glare and would blend better with the surrounding landscape.

8.5 Circulation and Parking

8.5.1 Entrances to The Motorway Service Areas

Because of the isolated location of the majority of service areas, standing alone in the barren landscape, the operators seem to be satisfied with the ability of travellers to see the service areas during day-time

However, this is not always the case as the roads are not always flat and straight. In addition, this is not an acceptable alternative to adequate signing, because signs should do more than inform travellers of an approaching service area, they should also reveal the nature of this service and the facilities provided.

At night, the over-lighting of the motorway service areas was used by operators to display the presence of the motorway service area. Additionally, some operators used extra lighting fixtures to show the exact service location. The use of lighting needs improving, and should be at all the motorway service areas together with adequate signing.

8.5.2 Access Roads to The Motorway Service Areas

Another shortcoming of many motorway service areas is the lack of adequate access roads, although they were required by the relevant regulations (Figure 8.26).

Although the travellers interviewed were not asked for an assessment of the existing access roads in the motorway service areas, the field results suggest the contrary, as the majority of service areas were found below the standards set for them by the Ministry of Transport.

This is primarily because of the lack of proper planning in developing the required standard entry and exit roads, and because of the lack of government enforcement.

Mr Al-Gahanam, the director of the development control section in Dammam Municipality, explained the shortcomings of access roads by saying:

"From an economical point of view, heavy investment in a proper access roads could double the project cost to figures beyond the ability of many operators".

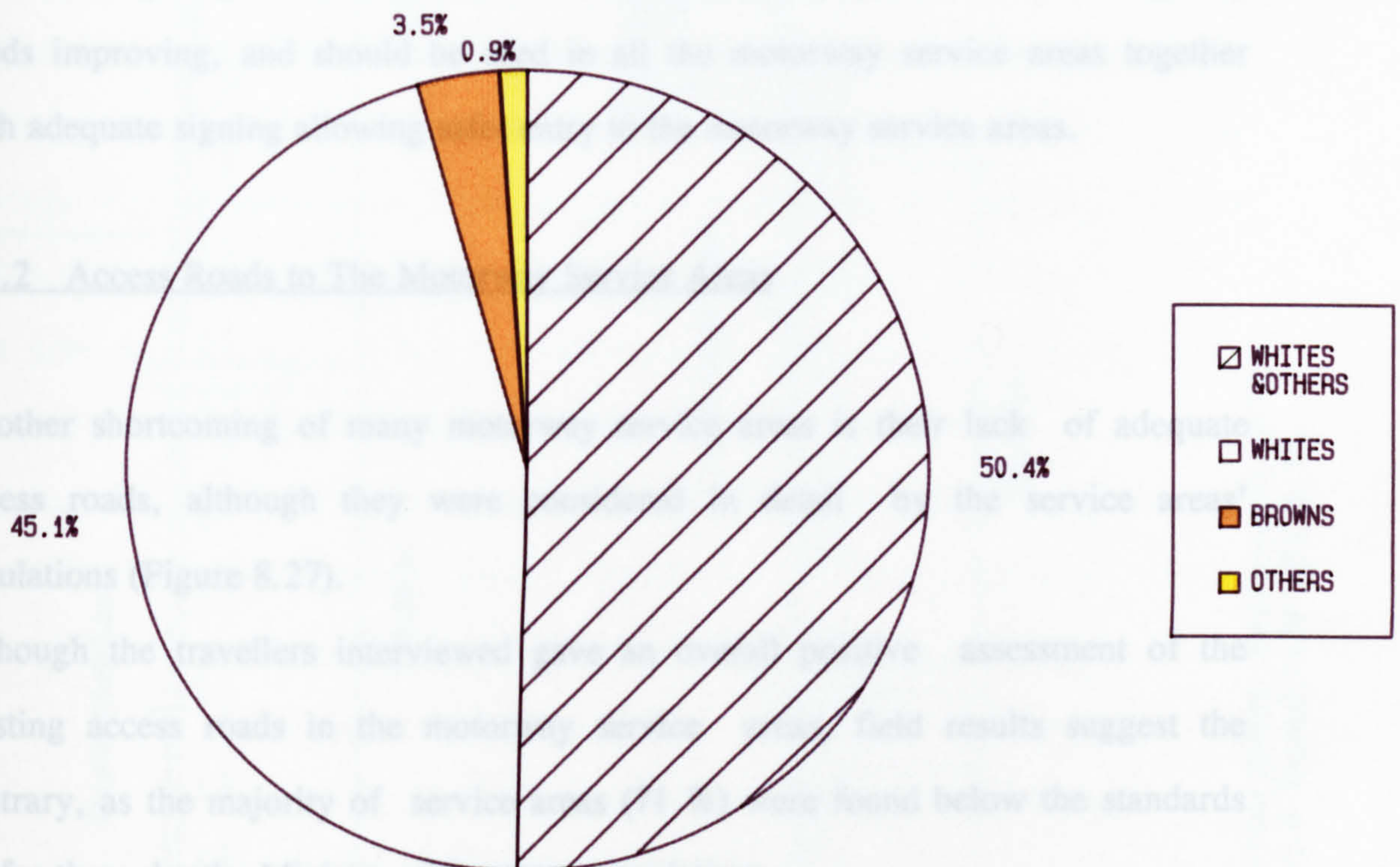


FIGURE 8.26: BUILDING COLOURS IN THE MOTORWAY SERVICE AREAS.

However, this is not always the case as the roads are not always flat and straight. In addition, this is not an acceptable alternative to adequate signing, because signs should do more than inform travellers of an approaching service area, they should also reveal the nature of this service and the facilities provided.

At night, the over-lighting of the motorway service areas was used by operators to display the presence of the motorway service areas. Additionally, some operators used extra lighting fixtures to show the exact entrance location. The use of lighting needs improving, and should be used in all the motorway service areas together with adequate signing allowing safer entry to the motorway service areas.

8.5.2 Access Roads to The Motorway Service Areas

Another shortcoming of many motorway service areas is their lack of adequate access roads, although they were considered in detail by the service areas' regulations (Figure 8.27).

Although the travellers interviewed gave an overall positive assessment of the existing access roads in the motorway service areas, field results suggest the contrary, as the majority of service areas (71 %) were found below the standards set for them by the Ministry of Transport regulations.

This is primarily because of the vast expense involved in developing the required standard entry and exit roads, and because of the lack of government enforcement.

Mr Al-Gahanam, the director of the development control section in Dammam Municipality, explained the shortcomings of access roads by saying:

"From an economical point of view, heavy investment in a proper access roads could double the project cost to figures beyond the ability of many operators"⁵.

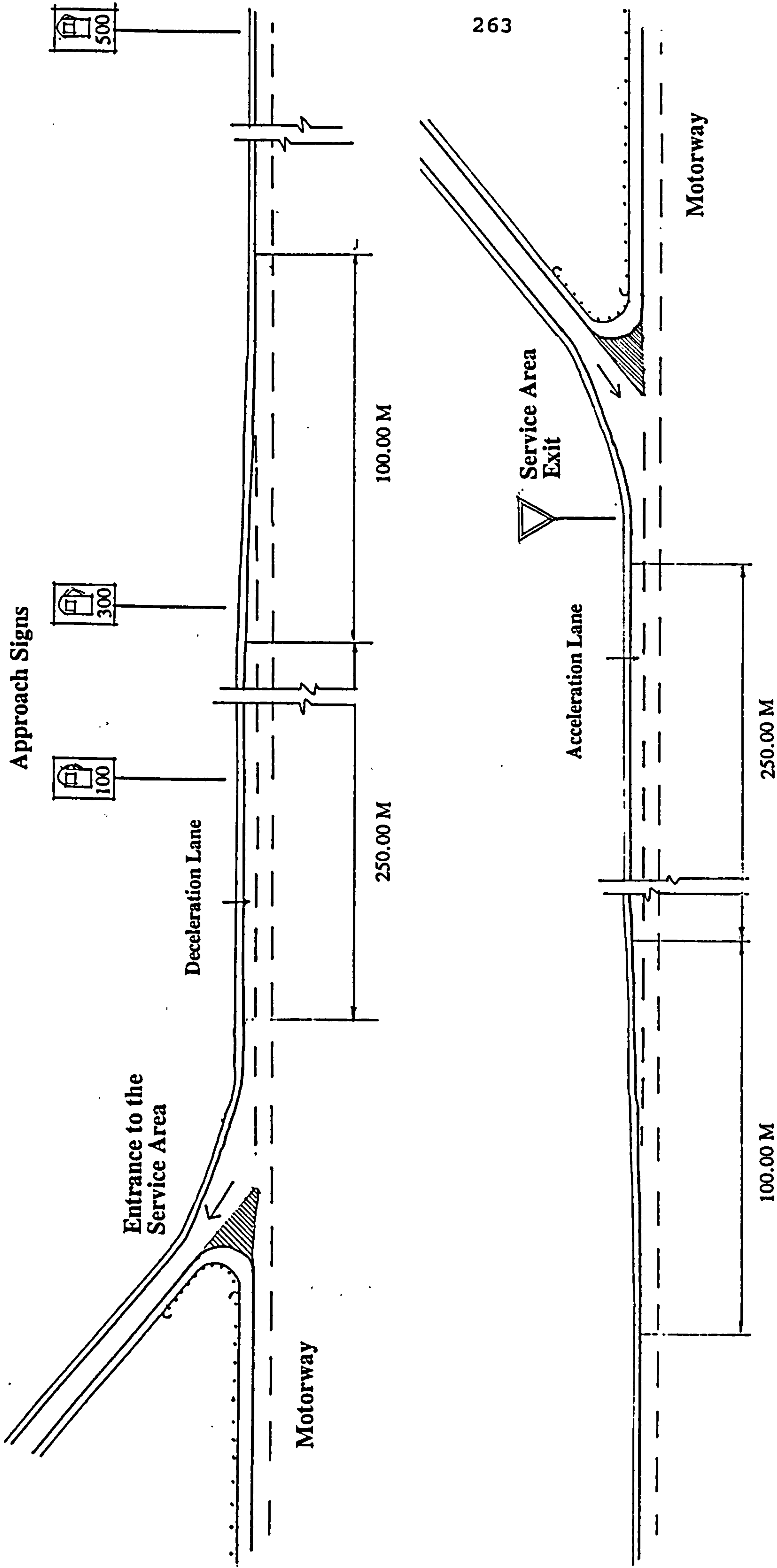


Figure 8.27:
Entry and Exit Roads to Motorway Service Areas- Redrawn From the
Ministry of Transport Specifications: GS-4 Dated:11/8/1401 A.H.

Additionally, the short lease periods also contributed to the poor access roads, as operators were uncertain of getting an adequate return for their investment.

8.5.3 Consideration for Pedestrian Separation

Due to the nature of the layout of the service areas and the absence of a centrally located parking area, little consideration had been given to pedestrian movement. Consequently motorists were allowed to park in front of the facilities they wanted to use. This situation of dispersion of parking had led to the invasion of vehicles into different locations within the motorway service areas, with the inevitable outcome of mixing vehicles with pedestrians.

In many of the existing motorway service areas, the only place for pedestrians to move about is between their vehicles and the service they require, which was usually only a few metres apart.

8.5.4 Parking Areas

During the design and development of the majority of motorway service areas, parking areas were not constructed as separate hard surface area where vehicles were partitioned off by a fence or other kind of barrier. Instead, the longitudinal nature of services in many service areas promoted a different parking situation, where private vehicles were allowed to park near to the service facility. Commercial vehicles, because of their size and their difficulty in manoeuvrability were usually forced to utilize the large open spaces available in the motorway

service areas for parking, which in many cases had hard asphalt surface (Figures 8.28, 8.29).

This situation, where there was no specific parking areas for the different vehicles and where drivers were allowed to park randomly resulted in parking chaos and consequently erratic vehicle circulation, especially during peak hours. This problem is accentuated in some service areas of limited open space where there is insufficient room to accommodate the commercial vehicles (Figure 8.30).

Many service areas do have the necessary hard surfaces or the adequate location needed to accommodate a large number of parked vehicles, but unfortunately operators fail to utilize them. Effort needs to be made in zoning these locations and supplying them with the required details such as walk ways as well as to parking and circulation markings, (which are very important in regulating traffic directions and establishing the individual parking bays.

Perhaps the great difference between the parking areas of Saudi service areas and those in Britain, is related to the building layouts. In British service areas, all travellers' services are located in one large building which can be reached from car parks, whether for private vehicles, lorries, or coaches. In the Saudi service areas, as mentioned above, services are dispersed around the entire site, resulting in a dispersed pattern of parking.

8.5.5 Shaded Parking

Shaded parking areas for vehicles were not considered by operators to be important features of the motorway service areas, therefore, they were only found in two service areas (and the parking stalls provided in these two service areas were limited in number). Nevertheless, in quite large number of service areas there are covered parking spaces for operators' vehicles, which confirms their conviction to the importance and the convenience of such facilities.



Figure 8.28:
Private Vehicles Parking Near the Facilities of Service Areas.



Figure 8.29:
Commercial Vehicles Parking in the Large Open Space.



Figure 8.30:
Parking Chaos in One of the Motorway Service Areas.

Because of the climatic patterns of the region, especially during the intensive solar radiation of summer months, and because of the usefulness of these facilities to the travelling public, a change in strategy should be implemented to encourage the creation of more shaded parking in the motorway service areas.

8.6 Signing in The Motorway Service Areas

Signs are very important in the motorway service areas, as they give important messages to the travelling public whether on the motorway or within the motorway service areas. Unfortunately signing associated with the motorway service areas are not compatible with other motorway signs which has reliable standards (Figure 8.31). The shortcomings of the approach signs and the signs within the service area itself will be examined in the following sections.

8.6.1 Approach Signs

Approach signs are vital elements in safely entering a motorway service area, because when reliable and adequately placed, they give the driver ample time to change lane when leaving the motorway.

Unfortunately, approach signs are not provided in a sizable proportion of the motorway service areas in the Kingdom. In fact, the field study showed that only 31% of the motorway service areas had approach signs of some sort. However, not all of these signs were suitably positioned, adequate, or legible. Only 18% of these approach signs were suitably placed and only 23% of them were adequate and legible (Figure 8.32).

8.6.2 Signs Within the Motorway Service Areas



Figure 8.31: Reliable Motorway Signing Compared to Service Areas' Approach Signs.



Figure 8.32: Not All Service Areas' Approach Signs were Adequate and Legible.

From the field study, signs within the motorway service areas were found to be inadequate in the majority of cases. One problem was their illegibility due to their size, colour, or materials used. In general, signs in service areas lacked standardization and unity in the messages given to the travelling public (Figure 8.33).

Moreover, it is clear from the field survey that, the quality of signs and the use of lights was in many cases related to the commercialism of the individual facilities in the service areas. Facilities with strong commercial potential, such as restaurants, shops, and petrol stations were usually better sign posted than those of the remaining services (Figure 8.34).

The inadequate signing of the different facilities in some of the motorway service areas has encouraged travellers to identify the major services from their general appearance, such as the seats of the traditional gahwahs, the minaret of the mosque..etc. The linear display approach of services layout in many service areas has also contributed to make this identification possible from inside travellers' vehicles.

In general, signing connected with MSAs proved to be inadequate in the majority of cases, whether on their approaches or within the service areas.

Improving signing should be one of the steps towards creating better and safer service areas. In addition, standardized signs should be adopted to improve communication and become familiar with all the drivers who use service areas.

Moreover, the use of signs within the service areas should be considered and developed alongside the establishment of a successful layout of services and not to solve the problems resulted from complicated layouts or confusing traffic circulation.



Figure 8.33:
Signs Within Motorway Service Areas.



Figure 8.34:
Facilities With High Commercial potential Have Better Signs.

8.7 Other Utilities and services.

8.7.1 Electricity in the Motorway Service Areas

Due to the remoteness of the service areas in respect to the urbanized areas, many were forced to produce electricity within their sites using petrol-powered generators (Figure 8.35). According to the service areas' survey, only 26% of the motorway services were connected to the power network, and the majority of these were on Riyadh-Taif motorway where network lines were available on a large section of that motorway.

8.7.2 Source of Water

The majority of service area operators said that they brought in water for drinking and other purposes from other locations using tanker trucks. Only the operators of eleven service areas mentioned that they had dug wells. As this well water was only suitable for washing and irrigating plants, drinking water was also brought in. Ministry of agriculture sources in Eastern Province stated that they have no objection in principle for MSAs operators to dig their own wells. However, in some cases they advise them not to do so, especially if the proposed well lies within an area where underground water of high salinity level is anticipated⁷.

8.7.3 Noise Problem

Two major factors contributed to noise in the motorway service areas. First, is the electric power generators, and second, is the travelling vehicles along the motorways, especially commercial trucks (Figure 8.36).



Figure 8.35:
Electric Generator in One of the Motorway Service Areas.



Figure 8.36:
The Two Major Noise Sources in Motorway Service Areas.

a. Electric Generator.



b. Commercial Vehicles.

The noise produced by the electric power generators was found to be continuous and more disturbing than that of the motorway traffic. The only exception was service areas that had been connected to the electric power network.

The volume of motorway noise is governed by traffic volumes, traffic combinations, and distance from the motorway, therefore noise levels fluctuate from one service area to another and from one time to another.

A large group of service areas had both noisy generators and motorway traffic which accentuated the problem.

Many factors should have been considered in detail during the planning and design stages of the motorway service areas. Elements such as the prevailing wind direction, distance from a noise source, topography of the site in addition to the use of landscape, building orientation, and type of openings should have been considered carefully in the early stages of service areas' planning and design to keep noise to the lowest level possible.

On the other side improvements in the generators themselves and their rooms should also be considered in an effort to minimize the noise at its source or starting point.

8.7.4 Maintenance of the Motorway Service Areas

One of the features of the motorway service areas is their need for constant maintenance and upkeep of their facilities to an acceptable operating level. Being a public oriented service requires the operators to be in a state of readiness to maintain the standards of the facilities provided. However, many motorway service areas lack that consideration in maintenance.

Although the Kingdom's motorways are considered new, (the first was opened in the mid 1980's with the construction of service areas coming shortly after), the majority of the service areas looked older than they really were.

According to the field survey, just over a half of the service areas surveyed needed some degree of maintenance, although that varied from one service area to another, both in scale and type.

In relation to scale of the maintenance needed, it was found that around one fifth of those needing maintenance were in a state of urgent need to keep them up to a suitable operating level, while the remaining four fifths were in a moderate need of repair.

In relation to the actual type of maintenance needed, this ranged from the physical upkeep of building exteriors to some details of their interiors, and from pavements and internal roads to signs and lighting fixtures. Other kinds of maintenance also included the constant cleaning and upkeep of toilets, the care of plants, and the tidiness of the whole site.

To improve the tidiness of the whole site, sufficient numbers of and properly positioned litter bins need to be provided in many more service areas. Perhaps, new designs of litter bins need to be introduced, such as the drive through ones, as they would be more convenient to travellers and would encourage them to dispose of their litter properly.

8.8 Overall Evaluation of Motorway Service Areas

During the interview with the travellers in the two motorway stations, they were asked to give an overall evaluation of the motorway service areas in the Kingdom. However, only travellers who had made at least five trips in the last two years were considered in the following analysis, so as to ensure that the responses were based on experience on the travellers' part.

The opinions of the travellers, as shown in (Figure 8.37), were divided into five groups. The first group (49.13% of travellers and comprising the largest of the five groups) evaluated the existing motorway service areas as 'good'. The second and third largest groups were almost the same size: 22.17% evaluated the motorway service areas as 'moderate'; and 21.74% evaluated them as 'very good'. The fourth largest group, 5.65% of travellers evaluated the motorway service areas as 'poor'. The smallest group, only 1.30%, evaluated the motorway service areas as 'very poor'. From looking at these groups together it shows that a sizeable proportion of the responding travellers gave an overall positive evaluation of the motorway service areas.

However this positive evaluation needs to be put into perspective considering a number of facts. Firstly, many lorry drivers are from developing countries where services are poor and that their positive evaluation is perhaps prejudiced by comparing conditions with those of their own countries' services. Moreover, the existing conditions in the surrounding countries, including the Gulf region is also another factor that should be considered in the interpretation of the positive results even from private motorists and Saudi Nationals.

Secondly, there was a general improvement of service areas after the introduction of the motorways especially when compared with standards prior to their introduction. Finally, the speed of the transition in mobility and roads has been very fast. Some of the older generation who used the traditional modes of transportation before the introduction of motor-vehicles are themselves users of today's service areas and have witnessing this rapid transition and are satisfied with the advances made (Appendix D.5). Yet maybe some of the travellers are confusing this positive appreciation of the motorway system with their positive evaluation of the service areas themselves.

It is fair to say that some operators did do their best to provide satisfactory services despite all the negative circumstances surrounding the development of MSAs, and for those operators who painstakingly provided good services mention should be made. Further, the government statement that brought the end to the service areas' development generalizes in its criticism to all service areas developments, regardless of the positive contributions provided by some operators.

8.9 Summary

From the previous discussion, it is clear that existing motorway service areas have many different kinds of shortcomings, and that these shortcomings are reflected on the design and utilities outcome of the individual service areas.

Some of these shortcomings are the sole responsibility of the government through its development control and planning bodies, others lay with the developers and the designers of these facilities. However, some shortcomings are caused by a combination of these public and private sectors involved in the service areas development.

The absence of standardization in the intervals separating service areas is a good example of the shortcomings on the government side. Moreover, most of the design shortcomings in areas like: the layout of services, buildings architecture, landscape design, and circulation in service areas are inter-related or collective shortcomings shared by the government, developers, and designers of the motorway service areas.

In this context of compound shortcomings, whether from the official circles (in the form of regulations themselves or their application and enforcement) or from the private developers (in the form of their abiding by these regulations), there is a definite need for revising current governmental regulations and practices if any serious improvements to service areas are to be expected. Such revision should be

targeted at improving planning, design, and development strategies jointly with successful methods for implementing these same strategies.

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CHAPTER NINE

CHAPTER NINE

CONCLUSION

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CHAPTER NINE

CONCLUSION

9.1 Summary

9.1.1 Services Background

Arabia's early history has, to a large extent been determined by the East-West transit trade, where the Arabs were the traders who mastered the desert and dealt successfully with its environment. In this pre-Islamic period early traveller's services in the Arabian peninsula were in towns, desert oases or tents of generous hosts where travellers could find water, shade, shelter and protection.

After the spread of Islam in Arabia and the rest of the Islamic World, the Islamic teachings inspired the concept of travellers' services. In fact, some of the major Islamic duties were amended to ease travel. Furthermore, the same teachings promised rewards and made it charitable to provide travellers with water and assistance.

These teachings were later translated into the building of more formal travellers' services, such as khans and caravanserais on the routes between cities. These caravanserais were usually built by the state as charitable foundations endowed to

provide free lodging to all travellers. The caravanserais contained many facilities to serve travellers and to make their journeys easier.

In the beginning of the 19th century (or perhaps earlier) new commercial services came into existence in the Hijaz region of today's Saudi Arabia. These services were called gahwahs, providing shelter for travellers and supplying them with food and drinks.

These first gahwahs of the 19th century were followed by the gahwahs of the transitional period which witnessed the introduction of motor vehicles and roads in the Kingdom. In the early days of motor-vehicles in the Kingdom, many difficulties were witnessed by travellers. Most of these difficulties were related to the country's terrain and the lack of modern roads. At that stage, travellers' expectations of services were limited to the provision of proper roads.

After the introduction of roads, towns and settlements on these roads became the centres for travellers' services where they could find petrol stations to refuel their vehicles and gahwahs to rest and dine. In addition some non-urban gahwahs were established between cities and provided similar services to travellers and their vehicles. Most of the motorist services in this transitional period (1950s - early 1980's) had many shortcomings related to their management, food quality, and the lack of family facilities, proper sleeping accommodation, and toilets.

In the early 1980's came the development of the new motorways and in this phase of transportation development in the Kingdom, came the need for more organized services parallel to the general development witnessed by the country at that period. The evidence from some governmental agencies at that period suggested that there was some awareness of the transitional gahwahs' shortcomings; however there were no clear objectives or goals laid down.

In other countries' experience, like Britain and America they were able to produce detailed provision policies with some clear objectives to control the development of travellers' services. All of that occurred at an early stage which coincided with the planning of the motorway systems in these two countries.

9.1.2 Government Policies and Controls

From examining the governmental policies it was clear that the majority of policies controlling motorists services has come in stages in response to some obvious needs, to rectify a situation, or to solve a problem, thus lacking the continuity and comprehensiveness needed in such policies.

The location of the different service areas for example, was handled improperly due to the lack of any comprehensive national policy; that, if it was available, would have set the standards to be followed in every development case. As a result, the location of service areas was left for the developers themselves to decide leading to unsatisfactory patterns of distribution as explained in Chapter Eight.

Another major shortcoming was the lack of coordination which dominated the relations between the different governmental authorities. A good example of this is the three different controlling authorities regulating the provision of facilities where some of these authorities sometimes acted outside their areas of specialization.

This lack of coordination has made the development process of the single motorway service areas a lengthy and complicated one and caused overlapping in control and sometimes conflict between the controlling authorities.

Moreover, some additional official factors such as the terms of the land rental contract, has also contributed to inadequate motorist services. The contract terms causes uncertainties to developers, and consequentially had a negative impact on the proper investment in the facilities provided in the service areas. For instance,

the condition which limited the rental period to ten years and gave the government the right to order the removal of the service area- if the location was needed for any future public interest project, has a definite negative impact on the development of proper service areas.

Another major area of shortcomings in control is the absence of an adequate follow-up of service area projects, to insure that their facilities and services are provided according to the regulation and standards set for them. The existing supervision and follow-up practices are not satisfactorily carried out by any of the governmental authorities engaged in the control of service areas development, hence they are liable for the inadequate services outcome.

9.1.3 Facilities in MSA's

Field evidence, as discussed earlier in Chapter Seven, has shown that facilities are not equally provided in service areas. There is one group of facilities which can be described as having a high rate of availability, and another group of facilities with a moderate rate of availability, and yet a third one with a low rate of availability. In addition, facilities within these three groups vary in their individual rate of availability.

To demonstrate the difference in availability rate let us use traveller oriented services, as an example. We find that groceries has the maximum availability rate among traveller oriented services, (being found in 85% of MSA's) while picnic areas and children play areas are only found in 1.6% of the motorway service areas. Similarly, if we compare two vehicle oriented services, we find fuel is found in 89% of motorway service areas, while spare parts are only found in 1.6% of motorway service areas.

This fluctuation in services provision puts some scepticism around the effectiveness of governmental follow-up of developed services. In fact, government codes for the

provision of facilities have not proved themselves as the primary factor behind the provision of services and facilities in motorway service areas.

The strongest factor behind the provision of services was found to be the rate of usage by travellers which consequentially led to a commercial return involved for many of the provided services.

It was also the commercial factor which was responsible for creating car wash facilities in a few service areas in locations nearer to potential demand from large cities.

The gap between the provision regulations and the actual needs of travellers can easily be seen in the grocery facilities found in service areas. These facilities operate successfully in many of the service areas and provide valuable services to travellers, although they were not demanded by the government provision regulations.

9.1.4 Planning and Design

Existing service areas were found to have many different kinds of shortcomings and these were reflected in the outcome of the service areas.

Some of the shortcomings are the sole responsibility of the government through its development control and planning bodies, others lay with the developers and the designers of these facilities. However, some shortcomings are caused by a combination of the public and private agencies involved in the service areas development. The absence of standardization in the intervals separating service areas along the roads is a clear example of the government shortcomings. However, most of the shortcomings in areas like the layout of services, architecture, landscape design, and circulation are collective shortcomings shared between the government, developers, and designers of service areas.

With these compound shortcomings, whether from the official circles (through regulations themselves or their application and enforcement) or from the private developers (in the form of their abiding by these regulations), there is a definite need for a revision of governmental regulations and practices if any serious improvement to service areas is to be expected. Such revision should be targeted at improving planning, design, and development strategies jointly with the development of successful methods for implementing these same strategies.

9.2 Recommendations

9.2.1 Objectives

There should be clear planning objectives for the creation of today's MSAs, such is their contribution to the comfort and convenience for travellers and to the safety of motorway travel. This would lead to a better execution of the detailed development tasks needed and will result in the successful collective contribution from controlling authorities, developers, and designers of MSAs.

The special consideration and exceptional treatment given to the travellers by Islamic teachings has encouraged Islamic states historically to adopt similar stand and use means which were outstanding at their time for the comfort and convenience of travellers.

The past contributions of the caravanserais and the traditional gahwahs in serving travellers should encourage us to do more for today's travellers, especially with the advancement in the transportation field and the change in mobility.

9.2.2 Control and Controlling Authorities

Coordination, cooperation, and team work should dominate the controlling authorities' handling of the MSAs if their services are to be improved.

The government's multiplicity in coding and following-up of the development of facilities should be reduced, as it has negative implications on the services provided. One implication is that it distances MSAs during their development from being closely monitored and followed-up by a specific body. This body, if found, can perform defined responsibilities and can reduce many areas of uncertainties in the development process.

It would also reduce some of the development aspects which are presently not controlled by any of the interested authorities. Such areas of neglect include the MSA's ambience and the consideration of a restful and relaxing atmosphere needed in MSAs. This would finally increase the concern for the comprehensiveness needed in the MSA produced.

One of the ways to create the integration needed is to produce detailed standards by the different controlling authorities, and leave the implementation and follow-up to a single body. This body should involve professionals from different backgrounds which represent the controlling authorities and carries their functions. This body could either be independent or lie within the Ministry of Transport or the Ministry of Municipal and Rural Affairs. This will aid in concentrating the authority over MSA's development and hence their accountability for MSA's final outcome.

9.2.3 Facilities Availability and Standards

It is very important in gaining travellers' confidence in the motorway system in general and MSA's in particular, to ensure a minimum provision of services and

facilities. The traveller has the right to know what kind of services he is going to experience. Chapter Seven lists a number of services indicating their importance. It is clear that the majority are important and, therefore, should be provided in the individual MSA's. In addition, it is unjust to give two service areas with big differences in their level of providing facilities the same recognition. This of course means, that if service areas were to continue offering varying levels of provision that should be organized, then an efficient means of communicating that information to travellers should be adopted. This could either be by using approach signs or by other printed materials, such as maps and printed leaflets, presented free to travellers to help them in planning their stops.

It is very important for the controlling authorities to understand the effect of the commercial factor on the provision of the different services and facilities in the MSAs. The provision of some facilities, such as toilets and picnic areas has no direct commercial gain, therefore the availability of such facilities should be guaranteed by the provision regulations.

By the same token, the level of the services provided need to be rated, and this information fed back to travellers. Some kind of ranking system could possibly be incorporated to grade or classify MSAs depending on the standard of the services provided; a system similar to that which is used successfully by the Hotels Administration Department (Ministry of Trade and National Economy) for the ranking of the Kingdom hotels (Appendix D.6). This will perhaps encourage operators to compete in presenting better services in the individual service areas.

In coding services, specifications should not strictly centre around today's requirements. Some areas of freedom should always be allowed for developers, to give them some flexibility towards future adaptation. A good example of developers' adaptation to meet practical needs is the rental of motel rooms and

family dining rooms (using an hourly system) and the provision of grocery shops in the MSAs (although they were not demanded by existing specifications).

This undoubtedly requires a continuous contact between the controlling authorities and the MSA's field of practice, to encourage any positive contribution to the improvement of MSAs operation, management, and service to travellers.

9.2.4 Planning and Design

Intervals:

The intervals between service areas, as shown in Chapter Eight, are currently lacking uniformity and standardization. A clear sign of irregularity of intervals is demonstrated in Riyadh-Taif and Makkah-Madinah motorways where a large proportion of intervals are ranging between 0 Km (meaning two service areas are operating side to side) and 10 Km, while there are larger intervals on the same motorways which require infill developments to reduce the distance between the service areas.

Current intervals, therefore, should be addressed on the planning level of the MSAs. This will definitely require controlling authorities to work on a national scale in rearranging intervals into more uniform and functional patterns, which will satisfy travellers' needs and promote the economical benefits of MSA's operation.

Layout:

As explained earlier in Chapter Eight, for the improvement of the service areas layout, travellers' services should be gathered in one area clustered beside a parking area. However, walking distances should be shortened and preferably protected from summer intensive solar radiation. Additionally, the provision of shaded parking is also recommended in motorway service areas.

As with travellers' services, vehicle oriented facilities should also be clustered together and a buffer zone should separate them from traveller oriented services.

The layout should also consider the different stoppage patterns made by the different travellers, as there are different stoppage durations. Travellers making short stops usually use fuel, shop, and toilet services, while travellers on long stops usually use other time demanding services such as dining, oil and tyre service, or gahwahs. However, that may require duplication (on a limited basis) of some facilities such as toilets and shops.

Better layout also requires improved vehicle circulation, and minimizing the intersection between vehicle and pedestrian movement.

Views:

Based on the field survey and the views analysis discussed earlier in Chapter Eight, it was clear that the dominant views from inside MSAs were of motorways, parking areas, and petrol stations. In 96% of the service areas, views were directed towards the motorways; and in 95% views were directed towards parking areas; and in 53% views were directed towards petrol stations.

This confirms the need for improving views from inside MSAs. Improvement can be achieved by re-locating dining facilities within motorway service areas, i.e. by placing them away from parking areas, motorways and petrol stations; and also by the proper positioning of their openings. In addition, it is important that more MSAs should benefit from the views of the natural landscape surrounding them. It is unfortunate that only 3% of motorway service areas have benefited from such views.

Landscape Architecture:

Although some functional planting design was recorded in some service areas, still there is a need to put a strong emphasis on producing an integrated landscape

design, promoting travellers' rest and relaxation. This also means putting more emphasis on the selection of the MSA sites and on the landscape architect's role in the planning, design, and development of the motorway service areas.

Architecture:

The quality of architecture should be improved in MSA's so as to be compatible with services of similar nature in the urban areas. Diversity in building materials used in MSAs is very apparent from the field study. As mentioned earlier in Chapter Eight, five distinctive building material groups (in different combinations) were identified in the motorway service areas.

The diversity in building materials used in the individual service areas need to be accommodated by the use of coherent building style, that should consider openings, texture, and colours used.

Furthermore, colours should be chosen carefully to blend with the surroundings and improve the visual quality of the service areas. Field study has shown that white colours were used partially in 45.1% of service areas and fully in 50.4% of service areas. However that was not always the most suitable colour for many of the locations, as explained earlier in Chapter Eight.

Improving the layout can also contribute to the improvement of a building's form and function, especially when facilities can be successfully grouped and isolated independent buildings minimized. In addition, the effect of a building's height on the architectural form should also be considered in the design of motorway service areas.

Service areas should try to reflect the traditional architectural character in the region where they are located, as there are very rich architectural heritages in the different regions of the Kingdom.

Additionally, historical caravanserais and traditional gahwahs still inspire some design ideas for our contemporary service areas, whether in form, style, interior

design, or traditional furniture; which if incorporated carefully can enhance the ambience and the historical linkage of contemporary service areas.

Other Design Aspects:

As seen in Chapter Eight improvement should be introduced in areas of MSA's entrances, access roads, outdoor lighting, and signing- since all of these aspects are related to the safety of travellers. The Ministry of Transport codes for access roads are adequate, but they need more enforcement, especially as the majority of service areas (71%) were found to be below the Ministry of Transport's standards.

The other design aspects mentioned above need clear specifications, such as in the use of approach signs which are vital for motorway service areas. However they were only found in 31% of the motorway service areas. Even in the service areas where they were found they were not always adequately placed or sufficient and readable. In fact, only 18% of them were adequately placed and only 23% were sufficient and readable.

More over, the function of approach signs should be more than informing travellers of an approaching service area; they should reveal the nature of this service, the facilities provided, and show the exact entrance point.

Noise problem in motorway service areas (whether from generators- 70.4% of MSA's produce their own electricity or from the motorway traffic) should be considered and some of the solutions mentioned earlier in Chapter Eight should be sought to reduce the nuisance caused to users. In fact, this should be understood to be part of the MSA's role of providing comfort and convenience to travellers.

9.2.5 Maintenance

Motorway service areas are public oriented services and therefore need constant maintenance and upkeep of their facilities to remain at an acceptable operating level. Although motorway service areas are considered new in the Kingdom (the earliest were opened in the mid 1980's), the majority of service areas looked older than they really are. According to the field survey and the previous discussion in Chapter Eight, just over a half of the service areas surveyed had shown some degree of need for maintenance.

Therefore, it is very important that operators should be encouraged to contribute more to the maintenance of the structures and facilities in the MSA's, and to keep them within reasonable operating standards.

9.2.6 Contracts

As explained earlier in Chapter Six, developers should be chosen carefully when leasing future services locations. The decision should consider their past experience in the field, and their financial ability to fund the construction and manage the proposed service areas successfully.

The limited period of MSA's land leases needs to be re-examined in depth together with the condition which gives the government the right to ask for the removal of the MSA. The commercial logic and other countries' experience suggest that better terms and longer lease periods should be adopted for a better future services' outcome.

For existing service areas, the negative impact from the short land lease (ten years) and the above mentioned conditions has already occurred. Therefore, controlling

authorities should at least benefit positively from the limited lease period in the following manner:

Operators near the end of their lease period are required to apply for an extension for another period, thus there is a good opportunity to rectify much of the negative aspects of compliance and a chance to push forward some of the recommendations mentioned earlier through negotiation with operators before they are given the required extension. This will of course lead to the opening up of important dialogue with MSAs operators, and gives the government the upper hand in the improvement of existing service areas.

Before entering into dialogue with operators it is very important for the government to be organized, as explained earlier in this chapter, and ready, in dealing with the different detailed aspects of service provision and standards, if any dialogue is to be productive and fruitful for the improvement of services.

9.2.7 Epilogue

It is clear that the development in Saudi Arabia was perhaps faster than the country's ability to cope with it, especially in the field of motorway services. Development of the roads themselves as an engineering product was very hasty and straight forward compared to motorway service areas. They are public oriented facilities and involved different interests from travellers, operators, and governmental authorities- beyond the ability of the existing management to control.

For example, the Ministry of Transport did not have a special section to deal with the road services until recently, (previously, all road service issues were handled by the Ministry's Design department). Moreover, the unavailability of some of the qualified professionals, such as planners and landscape architects, and the absence

of research oriented solutions has characterised our MSA system from the early days of motorway development.

It is very important to overcome this shortage in qualified professionals in the government offices if the service areas are to be improved, and it is very important also to stress the role of further research for the implementation of the recommendations mentioned earlier. That of course requires the understanding and awareness of all the parties involved in the development of motorway service areas, and the cooperation and assistance from the universities and research centres.

At the end, it is the author's hope that this work has produced some contribution to the evaluation and hence the understanding of motorway services in the Kingdom of Saudi Arabia.

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APPENDICES

Appendix A

Inventory and Questionnaire Forms

A.1 Inventory Form

A.2 Questionnaire Form

A.1

Inventory of Motorway Service Areas

1.General

1.1 Case I.D:

1.2 Date: 1.3 Time:

- 1.4 Motorway: 1.Riyadh-Dammam ()
2.Riyadh-Taif ()
3.Makkah-Madinah ()
4.Riyadh-Qasim ()

- 1.5 Travel Bound: 1.North ()
2.South ()
3.East ()
4.West ()

1.6 Location: Distance From Origin: Km
Distance From Destination: Km

2.Available Facilities

- | | |
|------------------------------|-----|
| 1.Fuel | () |
| 2.Oil and Tyre Services | () |
| 3.Vehicle's Service (Garage) | () |
| 4.Restaurant | () |
| 5.Cafeteria | () |
| 6.Gahwah | () |
| 7.Grocery | () |
| 8.Mosque (Prayer Area) | () |
| 9.Motel | () |
| 10.Family Dining Rooms | () |
| 11.Toilets | () |
| 12.Toilets (Ladies) | () |
| 13.Drinking Water | () |
| 14.Picnic Area | () |
| 15.Children's Play Area | () |
| 16.Ladies' Prayer Area | () |
| 17.Spare Parts | () |
| 18.Towing Trucks | () |
| 19.Car Wash | () |
| 20.Ice Sale | () |
| 21.Gift Shop | () |

List Any Additional Facilities Available in the MSA:

1.

2.

3.

4.

5.

Number of Available Toilets in the MSA: ()

3. Entrance and Parking

	Yes	No
1. Approach Signs, Available ?	()	()
2. Signs Adequately Spaced ?	()	()
3. Signs Sufficient and Readable ?	()	()
4. Entry and Exit Roads , Adequate ?	()	()
5. Clear Entrance ?	()	()
6. Defined Parking Area ?	()	()
7. Shaded Parking ?	()	()
8. Separate Parking for Trucks ?	()	()

4. Architecture and Landscape

	Yes	No
4.1 Buildings Blend with the Site ?	()	()

4.2 The View From the Main Building is Towards:

- 1. Motorway ()
- 2. Parked Vehicles ()
- 3. Gas Station ()
- 4. Broader Landscape ()
- 5. Others, specify:

4.3 MSA Buildings' Height:

- 1. 1 Floor ()
 - 2. 2 Floors ()
 - 3. 3 Floors ()
 - 4. 1,2 Floors ()
 - 5. 1,3 Floors ()
 - 6. 2,3 Floors ()
 - 7. 1,2,3 Floors ()
-

4.4 Building Materials Used in the MSA:

- 1. Reinforced Concrete ()
 - 2. Concrete Blocks ()
 - 3. Steel ()
 - 4. Concrete Roofs, Reinforced by Wooden Beams ()
 - 5. Steel Roofing ()
 - 6. Others, Specify:
-

4.5 MSA' Buildings Colour:

- 1. Whites ()
 - 2. Blues and Greens ()
 - 3. Browns ()
 - 4. Others, Specify:
-

4.6 Layout of Services:

- 1. Poor
- 2. Moderate

3. Good

4.7 Building Form:

- 1. Poor ()
 - 2. Moderate ()
 - 3. Good ()
-

4.8 Building Style (Colour, Texture, Openings, and Details):

- 1. Poor ()
 - 2. Moderate ()
 - 3. Good ()
-

4.9 Planting Purposes:

- 1. Shade
 - 2. Screening
 - 3. Accentuate Entrance
 - 4. Wind Barrier
 - 5. Beauty and Colour
 - 6. Pleasant Scale
 - 7. Others, Specify:
 - 8. Not Applicable
-

4.10 Species of Plants Used:

- 1. 2.
- 3. 4.
- 5. 6.
- 7. 8.

9. 10.
11. 12.
13. 14.

5.General Conditions

5.1 Outdoor Cleanness:

1. Good ()
2. Moderate ()
3. Poor ()

5.2 Number of Litter Bins Available ()

5.3 Properly Placed Yes () No ()

5.4 Need for Maintenance:

1. Urgent Need ()
2. Moderate Need ()
3. No Need ()

5.5 Nature of Maintenance Needed:

5.6 Is Lighting Adequate ? Yes () No ()

5.7 Does Noise Appear to be A Problem ?

Yes () No ()

5.8 Noise Source:

1. Electric Generator ()
2. Motorway ()

3. Both ()

4. Not Applicable ()

5.9 Is Signing Within Site Adequate Yes () No ()

5.10 Source of Electricity :

1. Generated on Site ()

2. Network ()

5.11 Water Source:

A.2

The Questionnaire

- | | | |
|------------------|---------------------|-----|
| 1. Vehicle used? | 1. Passenger Car | () |
| | 2. Pick-Up | () |
| | 3. Commercial Truck | () |
| | 4. Taxi | () |
| | 5. Bus | () |

-
- | | | |
|-----------------------|--------|-----|
| 2. With Family Group? | 1. Yes | () |
| | 2. No | () |

-
- | | | |
|---------------------------------------|-------------|-----|
| 3. How many passengers are travelling | 1. Adults | () |
| with you? | 2. Children | () |
-

4. How many long distance trips you
have made in the last two years ----- Trips
using the motorways?

5. What is your overall evaluation of	1. Very Good
services on the Kingdom Motorways?	2. Good
	3. Moderate
	4. Poor
	5. Very Poor

6. For how long on average your short
stops last? -----Minutes

7. For how long on average your long
stops last? (exclude night long
sleeping stops). -----Minutes

8. Where are the origin and destination
of this trip?

Origin -----

Destination -----

9. What are the services used by you or your party in
this stop?

1. Fuel	()
2. Oil and Tire Services	()
3. Other Auto Services	()
4. Restaurant	()

- 5.Cafeteria ()
- 6.Gahwah ()
- 7.Family Dining Fac. ()
- 8.Ice ()
- 9.Grocery ()
- 10.Motel ()
- 11.Toilets ()
- 12.Other Services, Specify:

10. What is the main reason for stopping in this service area ?

- 1.Fuel ()
- 2.Oil and Tire Services ()
- 3.Other Auto Services ()
- 4.Restaurant ()
- 5.Cafeteria ()
- 6.Gahwah ()
- 7.Family Dining Fac. ()
- 8.Ice ()
- 9.Grocery ()
- 10.Motel ()
- 11.Toilets ()
- 12.Other Services, Specify:

11. For Families Only.

During a long stop for a meal in a service area what is your preference among the following:

1. Air conditioned motel room
(with private bath), for 25-30 S.R/Hr. ()
2. Air conditioned room, for 15-20 S.R/Hr. ()
3. Non-Airconditioned rooms, Free of charge. ()
4. Private section of the restaurant. ()

12. In your opinion, are service areas' entry and exit roads capable of handling entering and exiting vehicles safely without any hazard or disturbance to the motorway traffic?

1. All of them are safe. ()
2. Most of them are safe. ()
3. Some of them are safe. ()
4. None of them is safe. ()

13. In your opinion, how far should be the distance between every two stations on the Kingdom motorways?

-----Kms

14. If you are in a long trip and felt tired and sleepy,
where do you like to stop to sleep?

1. Inside or near my vehicle ()
2. In the nearest service area's motel ()
3. Continue driving to the nearest city ()
4. In other place, Specify: -----

15. Is there any services that you would like to see in
the Kingdom service areas?

- 1.-----
 - 2.-----
 - 3.-----
 - 4.-----
-

16. On a scale from 1 to 5 Please grade the following services according to their priority and need to be in the Kingdom Service Areas.

(Grade 5 for the most important services)

(Grade 1 for the least important services)

Service	Grade
<hr/>	
1. Fuel	()
2. Oil and Tir	()
3. Vehicle' Maintenance	()
4. Spare Parts	()
5. Car Wash	()
6. Towing Service	()
7. Restaurant	()
8. Cafeteria	()
9. Gahwah	()
10.Mosque	()
11.Grocery	()
12.Motel	()
13.Gift Shop	()
14.Toilets	()
15.Drinking Fountains	()
16.Ice Sale	()
17.Picnic Areas	()
18.Family Dining Fac.	()
19.Children's Play Area	()

17. Driver Nationality:

18. Date:

19. Time:

Interviewer's Name:

Appendix B

Examples of Computer Analysis

B.1 Coding Forms

B.1.1 Inventory Coding Form

B.1.2 Questionnaire Coding Form

B.2 Sample of Computer Input File On the University Main Frame (Spssx)

B.3 Sample of Computer Command Files On the University Main Frame (Spssx)

B.3.1

B.3.2

B.4 Sample of Computer Command and Output Files On the Personal Computer (Spss Pc)

B.1.1

Inventory Coding Form

ACKNOWLED, A. USER: TCH7
TOWN & COUNTRY PLANNING DEPT.

INVENTORY

1611

[illegible]

B.1.2

Questionnaire Coding Form

[illegible]

B.2

Sample of Computer Input File On the University Main Frame (Spssx)

```

TTC47 ***** )TTC47 ***** )TTC47 ***** )TTC47 ***** )TTC47 *****
TTC47 ***** )TTC47 ***** )TTC47 ***** )TTC47 ***** )TTC47 *****
TTC47 ***** )TTC47 ***** )TTC47 ***** )TTC47 ***** )TTC47 *****
TART JOB 5435          10:34          1 0000 33      TCH7 *****
TART JOB 5455          10:34          1 0000 33      TCH7 *****
TART JOB 5435          10:34          1 0000 33      TCH7 *****
TART JOB 5435          10:34          1 0000 33      TCH7 *****
TART JOB 5435          10:34          1 0000 33      TCH7 *****
JOB STATISTICS :          0 CARDS,          61 PAGES,          0 CARDS PUNCHED, ENTERED FROM M

```

[illegible]

XX

B.3.1

Sample of Computer Command File On the University Main Frame (Spssx)

```
QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 *****
QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 *****
QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 *****
QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 *****
QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 ***** QTCH7 *****

START JOB 5420      10:56  14 OCT 88      TCH7 *****
START JOB 5420      10:56  14 OCT 88      TCH7 *****
START JOB 5420      10:56  14 OCT 88      TCH7 *****
START JOB 5420      10:56  14 OCT 88      TCH7 *****
START JOB 5420      10:56  14 OCT 88      TCH7 *****
```

JOB STATISTICS : 0 CARDS, 6 PAGES, 0 CARDS PUNCHED,

```
EDIT
DATA LIST FILE=DATA2 RECORDS=2
/ 1 I.D 1-3 MOTORWAY 6 TRV.DIR 7 STP.NO 10-12 DIS.ORG 14-18
DIS.DST 20-24 NAT.STP 26 FAC7 TO FAC38 28-59 W.C 61-62
APP.SIG 64 SIG.SP 65 SIG.SUF 66 ACC.LNE 67 ENT.EXIT 68
PVD.RDS 69 DEF.PRK 70 SHD.PRK 71 TRK.PRK 72 TRF.PED 73
BLD.VISB 75 GD.GRP 76 CONS.CHR 77 BLND.ST 78 VIEW 79-80
/ 2 BLD.MAT 6-7 BLD.CLR 9-10 SERV.LYT 12 BLD.FRM 13 BLD.STL 14
EX.PLNT 16 PLNT.PR 18-19 PLNT1 TO PLNT43 21-63 CUT.FILL 64
GRND.LVL 65 OUT.CLEN 66 GARB.CNT 67-68 CNT.SP 69 W.C.CLN 70
MAINT 71 LIGT.ADQ 72 LIGT 73-74 NOIS.PR 75 NOIS.S 76
INT.SIGN 77 ELE.S 78 WATR.S 79 BLD.H 80
MISSING VALUES FAC7 TO FAC38(9) W.C(98,99)
VIEW, BLD.MAT, BLD.CLR(99) APP.SIG(9) SIG.SP, SIG.SUF(3,9)
ACC.LNE TO TRF.PED(9) BLD.VISB(9) GD.GRP TO BLND.ST (8,9)
SERV.LYT TO BLD.STL(9) PLNT1 TO PLNT43(9) PLNT.PR(98,99)
CUT.FILL, GRND.LVL(9) OUT.CLEN(3,9) GARB.CNT(98,99)
CNT.SP TO MAINT(93,99) LIGT.ADQ(9) LIGT(93,99)
NOIS.PR TO INT.SIGN(3,9) ELE.S TO BLD.H(9)
VARIABLE LABELS TRV.DIR 'TRAVELLING DIRECTION'
STP.NO 'STOP NUMBER'
DIS.ORG 'DISTANCE FROM ORIGIN'
DIS.DST 'DISTANCE FROM DESTINATION'
NAT.STP 'NATURE OF STOP'
FAC7 'FUEL'
FAC8 'OIL AND TIRES SERVICE'
FAC9 'VEHICLE SERVICE (GARAGE)'
FAC10 'RESTAURANT'
FAC11 'CAFETERIA'
FAC12 'TRADITIONAL COFFEE SHOP'
FAC13 'GROCERY'
FAC14 'MOSQUE OR PRAYER AREA'
FAC15 'ACCOMMODATION FOR RENT'
FAC16 'ROOMS FOR FAMILIES DINING (FREE OR LITTLE CHARGE)'
FAC17 'TOILETS'
FAC18 'LADIES TOILETS'
FAC19 'LAVATORIES'
FAC20 'DRINKING WATER'
FAC21 'PICNIC AREA'
FAC22 'CHILDREN'S PLAY AREA'
FAC23 'LADIES PRAYER AREA'
FAC24 'SPARE PARTS'
FAC25 'TOWING TRUCKS'
FAC26 'CAR WASH'
FAC27 'T.C.F'
```


[illegible]

B.4

Sample of Computer Command and Output Files
On the Personal Computer (Spss Pc)

```
import /file 'a:expfile3'.
process if (stat eq 1).
recode no.trps (lowest thru 5=1) (5 thru highest=2) (else=sysmis).
select if (no.trps eq 2).
recode veh (1,2=1) (3=3) (else=4).
CROSSTABS /TABLES veh by evl.ths.
```

Can't move further down

Ins
spss.lis

Crosstabulation: VEH VEHICLE USED
 By DISTANCE DISTANCE BETWEEN MSA S
 Controlling for W.FAM WITH FAMILY GROUP
 = 2 NO

- - - - Page 1 of 4

DISTANCE→		Count						Row
		Row Pct	10	20	25	30	40	Total
VEH	1		1		2		2	146
	SMALL CAR		.7		1.4		1.4	60.6
	3			1		1	4	95
	TRUCK			1.1		1.1	4.2	39.4
Column			1	1	2	1	6	241
(Con	ted)	Total	.4	.4	.8	.4	2.5	100.0

Crosstabulation: VEH VEHICLE USED
 By DISTANCE DISTANCE BETWEEN MSA S
 Controlling for W.FAM WITH FAMILY GROUP
 = 2 NO

- - - - Page 2 of 4

DISTANCE→		Count						Row
		Row Pct	50	60	65	70	75	Total
VEH	1		30	5	1	7	14	146
	SMALL CAR		20.5	3.4	.7	4.8	9.6	60.6
	3		12			1	14	95
	TRUCK		12.6			1.1	14.7	39.4
Column			42	5	1	8	28	241
(Continued)	Total		17.4	2.1	.4	3.3	11.6	100.0

Appendix C

Field Work and Data Collection Documents

C.1 Data Collection Documents

- C.1.1 Sample Letter 1
- C.1.2 Sample Letter 2

C.2 Field Work Documents

- C.2.1 Sample Letter 1
- C.2.2 Sample Letter 2

C.1

Data Collection Documents

Official letters were obtained from King Faisal University to the different governmental and non-governmental agencies, explaining the purpose and the importance of the research and asking for their cooperation with the researcher by providing the relevant data and assistance.

C.1.1 Sample Letter 1

Kingdom of Saudi Arabia
Ministry of Higher Education
KING FAISAL UNIVERSITY
College of Architecture and Planning

بسم الله الرحمن الرحيم



المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك فيصل
كلية العمارة والتخطيط

الموضوع :

المحترم

سعادة أمين مدينة الدمام

السلام عليكم ورحمة الله وبركاته . وبعد

نفيد سعادتكم بأن المهندس / عبد العزيز محمد العويّد هو أحد مبتعثي الكلية لدراسة الدكتوراه في جامعة نيوكاسل أبون تاين بالمملكة المتحدة وهو يمدد أبحاثه من محطات الطرق الطويلة في المملكة . ومن ضمن متطلبات بحثه :

- (١) علاقة البلدية بالدوائر الحكومية الأخرى عند إنشاء أية محطة على الطرق الطويلة التي أنشأتها وزارة المواصلات .
- (٢) ما هي حدود صلاحية البلدية في مجال التمرير بإنشاء المحطات وما هو النطاق العمراني التابع لها .
- (٣) عند بناء محطة على الطرق الطويلة خارج النطاق العمراني سواء للمدن أو القرى أو البحر فمن يصدر رخصة البناء ومن يشرف على أتمام البناء حسب المخططات .
- (٤) من هي الجهة المسؤولة عن مستوى النظافة العامة في المحطات على الطرق الطويلة وترخيص المطاعم والخدمات الأخرى في المحطة .
- (٥) الحصول على صور من المراسيم أو التعاميم أو المذكرات المنظمة لإنشاء محطات الطرق الطويلة في المملكة .

نأمل من سعادتكم التكرم بالإيعاز لمن يلزم لاعطائه تلك المعلومات نظرا لأهميتها في أكمال بحثه .

شاكرين لكم صادق تعاونكم .

وتفضلوا بقبول والفر تحياتي ،،،

معيد الكلية

أ.م. مساعد/غازي سهل العتيبي



لتفديج ما يحيطه تقديره هذا الجفوع

أمانة مدينة الدمام
الوارد العام
رقم الوارد: ١٥٣٣/٢
تاريخ: ١٩/٩/١٤٣٦
المرفقات: ١

أ.م. مساعد/غازي سهل العتيبي

C.1.2 Sample Letter 2

بسم الله الرحمن الرحيم

Kingdom of Saudi Arabia
Ministry of Higher Education
KING FAISAL UNIVERSITY
College of Architecture and Planning



المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك فيصل
كلية العمارة والتخطيط

الموضوع: _____

المحترم سعادة وكيل وزارة المالية لشئون املاك الدولة

الريـاض

السلام عليكم ورحمة الله وبركاته - وبعد

نفيد سعادتكم بأن المهندس / عبدالعزيز محمد العويد يعمل بوظيفة
معيد بالكلية ، وهو الان مبعث لدراسة الدكتوراه في المملكة المتحدة ، وهو
يعدد اجراء بحث عن خدمات الطرق الطويلة بالمملكة .

نرجو من سعادتكم التكرم بمساعدته لما يحتاج اليه من وثائق ومعلومات
حول انشاء المحطات على طرق المملكة الطويلة خاصة ما يتعلق بطرق الحصول
على الاراضي التي اقيمت عليها المحطات ، وعلاقتكم مع الجهات الحكومية
الافرى صاحبة العلاقة في انشاء تلك المحطات .

شاكرين لسعادتكم صادق تعاونكم .

وتفضلوا بقبول وافر تحياتي ،،،

مدير الكلية

"مساعد/فاري بن سهل العتيبي"

C.2

Field Work Documents

C.2.1 Sample Letter 1

Sample of letters taken to the service areas where the questionnaires took place. These informed the management of the service areas of the nature of the study, when it would start and its duration.

بسم الله الرحمن الرحيم

Kingdom of Saudi Arabia
Ministry of Higher Education
KING FAISAL UNIVERSITY
College of Architecture and Planning



المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك فيصل
كلية العمارة والتخطيط

الموضوع :

الموقر

المكرم مدير محطة /

السلام عليكم ورحمة الله وبركاته

المهندس / عبد العزيز محمد العويد . أحد أعضاء هيئة التدريس بالكلية وهو الآن يجرى بحثا لنيل درجة الدكتوراه في إحدى الجامعات البريطانية عن خدمات الطرق الطويلة في المملكة ، وهو يمدد أجراء بعض الأبحاث الميدانية في بعض محطات الطرق السريعة في المملكة . ومحظكم بالإضافة الي محطات أخرى اختيرت لأجراء الأبحاث مع مستخدمي المحطة بتاريخ :

الرجاء التعاون معه لإكمال بحثه ، شاكرين لكم هذا التعاون من أهل المالح

العمام

وتقبلوا تحياتي.

عميد الكلية

"أ.مساعد/غازي سهل العتيبي"

منه/د. عبد العزيز الساعاتي



C.2.2 Sample Letter 2

Sample of the official letter carried by all the members of the survey team at all times during the survey, explaining the nature of the study and its sponsoring agency.

Kingdom of Saudi Arabia
Ministry of Higher Education
KING FAISAL UNIVERSITY
College of Architecture and Planning

الملك فيصل



المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك فيصل
كلية العمارة والتخطيط

الموضوع :

(الي من يهمة الامر)

يقوم المهندس / عبد العزيز محمد العويد أحد أعضاء هيئة التدريس بكلية العمارة والتخطيط . جامعة الملك فيصل الدمام . بإجراء بحث عن خدمات الطرق السريعة بالمملكة العربية السعودية وذلك لنيل درجة الدكتوراه في تنسيق المواقع من جامعة نيوكاسل أبون تاين بالمملكة المتحدة . ومن متطلبات بحثه أحـصـاء مقابلات مع المسافرين المستخدمين لخدمات الطرق السريعة . يساعده في ذلك بعض من منسوبي الكلية ، لذا نرجو التعاون معه بإعطاء المعلومات اللازمة لأكـمـال هذا البحث . ولكم جزيل الشكر

عميد الكلية
أ.مساعد / غازي سهل العتيبي
بإذن
منه / د. عبد العزيز الساعاتي



Appendix D

Other Documents

- D.1 Letter From the Arabian Automobiles Company
- D.2 Letter From Dammam Municipality to PETROMIN
- D.3 Contract Form for Leasing MSAs' Locations
- D.4 Al-Yamamah Article: Roads Like Roses and Services Like Thorns
- D.5 Al-Yaum Cartoon: About the Change in Travel Circumstances in Saudi Arabia.
- D.6 Hotels' Evaluation and Categorisation Form

D.1

A letter sent from the manager of the Arabian Automobiles Company in 3-12-1360 A.H (1941 A.D) to the Ministry of Finance complaining that camel riders were using the Makkah-Jiddah automobiles' road.

الملك
الملك

حضرة د.احب السعادة وكيل وزارة المالية

الافندي

بعد التنبية والاحترام !

يحتاجنا وندقة مستعجلة ان نلتفت ان ارضنا اصبحت الى كثرة الدواب التي تنجس ارضنا
في هذه السيارات - فقد هبط هذا الدواب في السير السيارات عليه غير ان السائقين كثرة شكايتهم
وتعددت الوقائع من جراء سلون الجمالة هذا الدواب وبهتة فتتبع ما يتبع ادم بين السيارات
وبين الجمالة على غلظة وكان آخر حادث وقع البارحة فقد اخترقت الجمالة سيارة في نزولها اجدهم وكانوا لا يدركون
ان يقع لولا انهم السائقين من ارضنا في تنجب الدواب والاداءم فقد عدل سيارته بسرعة الى غيرات ارضنا او
به لم انه يعترض سيارته للتلد فكانت النتيجة ان قلبه سيارته وانتهى من الدواب خالية وفي ذلك اهلنا ادارة
الامن العام الحادثة وكان الحضور لمحل الحادثة مع مدير السيارات ووزراء التفتيش الذين اثبتت
الجمالة وتسببهم في وقوع هذه الحادثة - والذي يدعونا من المروءة التي نرى انكم التذلل وبكسر
ان سير الجمال على هذه السيارات يعرض السائقين والسيارات لخطر كبير الامر الذي نرى اننا لا نلتصم
من سعادتك التوسل لدى المقام السامي لابلغ الجهات المعنية بالتنبيه على تانعام العامة والمخزج بسن
والناكيد عليهم بعدم سيرهم على هذه الحادثة تفاديا من الدواب - والله يدعكم مدير الشركة

مدير الشركة

مدير الشركة

XXX

D.2

An official letter sent from the Municipality of Dammam Region to PETROMIN (the only fuel distributor in Saudi Arabia), Asking their Eastern Province' Office no to supply new service areas with fuel unless they provide written approval from the Municipality. To insure the completeness of the new service areas according to their licences.

Handwritten signature and initials.

الشفون الفنية / طب التنمية

بشان تزويد المحطات الجديدة بالمحروقات .

المحترم

معادة / مدير بترومين بالمنطقة الشرقية

السلام عليكم ورحمة الله وبركاته

نفيدكم بأنه يتقدم للبلدية العديد من طلبات الترخيص لمحطات بنزين سواء داخل منطقة الدمام أو على الطرق الواقعة خارج المنطقة . وعند إصدار الرخص لهذه المحطات يطلب من أصحاب هذه المحطات التقيد بالمواصفات من شأنها تحسين وضع المحطات .

ورغبة منا في ضمان تكمال المحطة كما رخص لها فأننا نأمل منكم عدم تزويد المحطات الجديدة بالمواد البترولية إلا بعد احصاء شهادة من البلدية .

ولكم تحياتنا ..

رئيس بلدية منطقة الدمام

زايد فهد المكي

مر للشفون الفنية - طب التنمية - ملف مراسلات القسم .
مر شفون الفنية - طب التنمية - ملف محطات البنزين .
مر الصادر العام .

Municipality of Dammam Region, 'Letter sent from the Head of Dammam Municipality to the Rector of PETROMIN office in the Eastern Province', No.4688/2, In 21-7-1404 A.H (April 1984).

D.3

A copy of the contract form used in leasing service areas' locations to developers, issued by the Ministry of Finance and National Economy, Government Properties Department.

الملكه العربيه السعوديه بسم الله الرحمن الرحيم الرقم /
وزارة الماليه والاقتصاد الوطنى التاريخ /
مصلحة املاك الدوله المرفقات /

مقدم ايجار

بناءً على موافقة محالى وزير الماليه والاقتصاد الوطنى على ما مر به سعادة وكيل
الوزارة لشئون املاك الدوله بالمعرض رقم / وتاريخ / /
بشأن رغبة الموائن / فى استئجاره قاعه أرض ساحتها
من أراضي املاك الدوله الواقعه فى
وبناءً على موافقة معاليه بتاريخ / / فقد اتفق الطرفان على ان تقوم
وزارة الماليه والاقتصاد الوطنى كطرف اول على تأجير الموائن /
كطرف ثانى قاعه أرض من أراضي املاك الدوله وفق الشروط التاليه :
اولا : اجر الطرف الاول الطرف الثانى قاعه الأرض المبنه حدودها والمواهبها
وموقعها فى الرسم الكروكى المرفقه، والمبالغه مساحتها الاجماليه ()
ثانيا : يدفع الطرف الثانى للطرف الاول اجره سنويه قدرها
للمتر المربع الواحد أى بمبلغ اجمالى قدره ()
ريال (سنويا تدفع فى اليوم الاول من كل شهر للسنة الاجاريه .
ثالثا : مدة هذا العقد / سنوات متتابعه قابله للتجديد لمده
مماثله او اقل منها بعد موافقة الطرف الاول الدوليه على الطلب الذى يقدمه
الطرف الثانى قبل نهاية مدة العقد بسنه اشهر على الاقل حتى يأخذ
موافقة الطرف الاول على التجديد او رفضه واذا لم يحصل الطرف الثانى
على موافقة الطرف الاول على التجديد خلال المده المذكوره فان العقد
يعتبر منتهيا تلقائيا دون اشعار الطرف الثانى بذلك .
رابعا : يلتزم الطرف الثانى باقامة /

وذلك على موقع الارض المحدده بحدودها والمواهبها ومساحتها فى المساده
الاولى ويشترط على الطرف الثانى اقامة هذه المنشآت والمرافق خلال
سنة من تاريخ التوقيع على العقد من قبل الطرفين .
خامسا : اذا دعت حاجة للارض او حصل ان نزلت ملكيتها او جزء منها لايه منفعة عامه
فان الطرف الثانى يلتزم بإزالة كافة منشآته ولا يحق له الرجوع على الطرف الاول
بأية تمهينات .

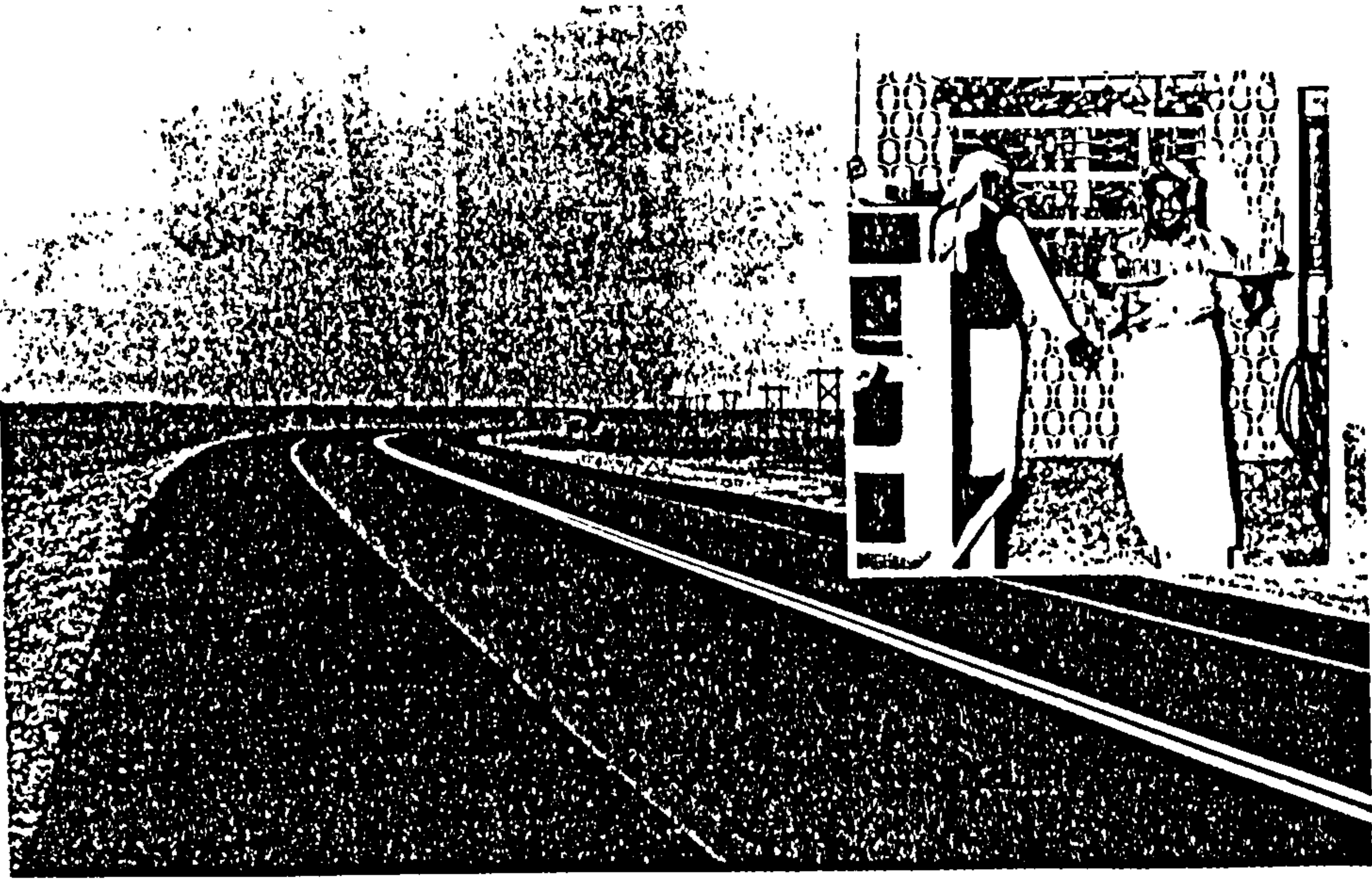
سادسا : يلتزم الطرف الثانى باقامة المنشآت والمرافق المشار اليها فى هذا العقد
داخل الارض المؤجره وعدم تجاوز المساحه المحدده او اقامة منشآت او اغراض
تخالف ما حدد فى العقد وفى حالة مخالفته لاءى شرا من شروط العقد يعنى
٢- يبيع

D.4

Al-Yamamah Article: Roads Like Roses and Services Like Thorns,
Describing the general situation of motorist services in Saudi Arabia.

قضية الأسبوع

31



طريق كالورد استراحات كالشوك!

الضرورة التي يحتاج إليها المسافرون. وأول هذه الخدمات وأهمها هي «الاستراحات»، التي يجد فيها المسافر مكاناً للاكل والشرب والراحة والعناية بسيارته. والاستراحات القديمة الموجودة الآن على اطراف هذه الشبكة لا تتناسب معها من ناحية، ولا تؤدي الغرض المطلوب منها من ناحية أخرى. فهل تمثل هذه الاستراحات مشكلة؟ وما حجمها؟ وإذا كان الأمر كذلك فما رأي أصحاب هذه الاستراحات، ورأي المتعاملين معها.. وقبل هؤلاء هؤلاء... ما رأي المسؤولين؟ هذا هو السؤال الذي تحاول هذه القضية ان تجيب عليه.

في المملكة أحدثت شبكة طرق برية في العالم. وهي شبكة واسعة ايضا يصل طولها إلى حوالي ثلاثين ألف كيلومتر. وليس غريباً ان تأخذ المملكة بهذا التوسع الكبير في إنشاء الطرق، لان المملكة هي الدولة القارة كما يقول الجغرافيون. فمساحتها الشاسعة هذه تفرض عليها إنشاء مثل هذه الشبكة الكثيفة من الطرق البرية. ثم ان الحضارة تمشي على الاسفلت كما يقال. فالطرق هي شرايين عملية التقدم كلها. وقد كان مما يتفق وطبائع الأشياء، ونحن نعيد صياغة هذا الوطن، ان نقوم، بنشر هذه الشبكة الحديثة من الطرق لنستكمل بها عملية البناء والتحديث. ولكن شبكة الطرق البرية الحديثة هذه لا تجد ما يتناسب معها من الخدمات

D.5

Al-Yaum Cartoon: About the Change in Travel Circumstances in Saudi Arabia.



اليوم

بسم الله الرحمن الرحيم

جريدة يومية تصدر عن دار اليوم للطباعة والنشر بالدمام



Oh my son:
You [I] tell some one [probably his son]:

"Take your mother in pilgrimage" [to Makkah]
He says: "I can't", although he is in good condition
and prosperity.

Did he see [witness] our old pilgrimage routes
before his birth ...!!!



توفيق الحمد

الحكومة العراقية
وزارة التجارة
إدارة المصارف
البنك العراقي للتجارة

البنك العراقي للتجارة
إدارة المصارف
وزارة التجارة
الحكومة العراقية

نمودار توصیف و نظریه ۱۱۰۷ هـ

١٠

نموذج توصيف وتقويم فنون

صفحة (٢)

د	هـ	و	ز	تابع - (المرافق والخدمات) -
				<p>المرافق والأجنحة ، هذه المرافق ()</p> <p>المرافق والأجنحة ()</p> <p>• مرافق بيان متصل بالمرافق والمرافق والأجنحة ومكتبها والمرافق والأجنحة لكل نوع منها.</p> <p>الخدمات المتعلقة بالمرافق والأجنحة :</p> <p>• العناية بالمرافق والأجنحة</p> <p>• النظافة والصيانة</p> <p>• التجهيزات والمرافق</p> <p>المرافق أو الخدمات المرصدة لم تذكر عليها :</p> <p>تجهيزات متعلقة بالمرافق</p> <p>ملحوظات الملاحظين</p> <p>الإسم :</p> <p>التوقيع :</p> <p>التاريخ :</p>

[illegible]

لموضع توصيف وتقويم فنون			
صفحة (١)			
- (المرافق والخدمات) -			
١	٢	٣	٤
			<ul style="list-style-type: none"> المولع العام مكتبة () نيسارية () سيدار () المبني خيسا سكر () سكر الصبح () ومعدات جامرة () المفضل بنهر () لمرى للمطبخ () المخابر الانسية مكتب مستقلة () مكتب واحدة خسانل () مهمو الاستقبال العامة () معاونو الاستقبال العامة () سكر () لشخص ممرى الارصة صند () مركبة () التنظيف معدات () مركزي () الاناث والديكرات والفرش موظفو الاستقبال عدد () محوري () عربي () اجنبي () قاعة الاجتماعات صاعة () صاعة () شخص قاعة الاجتماعات صاعة () صاعة () شخص قاعة المؤتمرات صاعة () صاعة () شخص قاعة المطبعة صاعة () صاعة () شخص المساعد عدد () لمرى () للمخابر لمرى () المستلزم عدد () ومعدات () حواري () عرض حائط () مطبخ الطوارئ عدد () مطبخ الممرى () واحدة () المعدات العامة ملحقا التنظيف بمخاض الارضي ومعدات () مركزي () الطعام عدد () صاعة () صاعة () شخص صاعة () صاعة () شخص التنظيف الاناث والاناث والديكرات المطابخ الخاصة () صاعة للمطبخ () شخص التنظيف والصرف والتزينة والحفاظ